Instructions for Use

PRESTIGE® LP CERVICAL DISC

Medtronic Sofamor Danek USA, Inc.
1800 Pyramid Place Memphis, TN 38132
Tel. 800 933 2635 (In U.S.A.)
901 396 3133 (Outside of U.S.A.)
Fax 901 396 0356

CAUTION: Federal (United States) law restricts this device to sale by or on the order of a Physician.

HOW SUPPLIED

Cervical Disc Implants – Sterile
Surgical Instruments – Non-sterile (unless otherwise noted on the package label)

DESCRIPTION

The PRESTIGE® LP Cervical Disc is a two-piece articulating device that is inserted into the intervertebral disc space as a single unit at a single cervical level using an anterior approach. The device is manufactured from a titanium ceramic composite (Ti-6Al-4V with 10% TiC) and consists of two metal plates which function via a ball and trough mechanism. The superior component of the implant contains the ball portion of the mechanism, and the inferior component contains the trough portion. These two features engage to create an interface designed to allow for motion after implantation. Each component is affixed to the adjacent vertebral body by two rail geometries incorporating anti-migration teeth which are press fit into two pre-drilled holes in the vertebral bone. The portion of the flat surface between the rails and contacting the vertebral endplate contains commercially pure titanium (CP Ti) plasma thermal sprayed coating designed to permit bony on-growth for additional device incorporation. The remaining portion of the flat surface is titanium ceramic roughened to enhance fixation.

PRESTIGE® LP implants are offered in a variety of configurations to accommodate varied patient anatomy. The available components are shown in **Table 1** below.

The device assembly is designed to restore and maintain disc height, maintain cervical spine motion, and serve as an alternative to cervical fusion. The disc is designed to allow a minimum of 10 degrees lateral bending (from neutral) and a minimum of 10 degrees flexion/extension (from neutral). The design is also intended to allow unlimited axial rotation (constrained by ligaments and posterior elements) and translation of ±2mm in the sagittal plane.

Table 1: PRESTIGE® LP Cervical Disc Device Sizes

Catalog Number	Component Description
6972260	6mm x12mm Disc Assembly
6972460	6mm x14mm Disc Assembly
6972660	6mm x16mm Disc Assembly
6972860	6mm x18mm Disc Assembly

6972470	7mm x14mm Disc Assembly
6972670	7mm x16mm Disc Assembly
6972870	7mm x18mm Disc Assembly
6972480	8mm x14mm Disc Assembly
6972680	8mm x16mm Disc Assembly
6972880	8mm x18mm Disc Assembly

PRESTIGE® LP devices are implanted using instruments specific to the device, as well as manual surgical instruments. Instruments specifically designed for implanting PRESTIGE® LP consist of trials, trial cutter guides, rail punches, and implant inserters. General purpose instruments include instruments for cervical distraction and discectomy preparation.

No warranties, express or implied, are made. Implied warranties of merchantability and fitness for a particular purpose or use are specifically excluded.

INDICATIONS FOR USE

The PRESTIGE® LP Cervical Disc is indicated in skeletally mature patients for reconstruction of the disc at one level from C3-C7 following single-level discectomy for intractable radiculopathy (arm pain and/or a neurological deficit) with or without neck pain, or myelopathy due to a single-level abnormality localized to the level of the disc space and at least one of the following conditions confirmed by imaging (CT, MRI, X-rays): herniated nucleus pulposus, spondylosis (defined by the presence of osteophytes), and/or visible loss of disc height as compared to adjacent levels. The PRESTIGE® LP Cervical Disc is implanted using an anterior approach. Patients should have failed at least 6 weeks of non-operative treatment or have had the presence of progressive symptoms or signs of nerve root/spinal cord compression in the face of continued non-operative management prior to implantation of the PRESTIGE® LP Cervical Disc.

CONTRAINDICATIONS

The PRESTIGE® LP Cervical Disc should not be implanted in patients with the following conditions:

- Active systemic infection or localized infection at the surgical site
- Osteoporosis defined as a DEXA bone mineral density T-score equal to or worse than -3.5 or a T-score equal to or worse than -2.5 with vertebral compression fracture, or osteopenia defined as a DEXA bone mineral density T-score ≤ -1.0
- Allergy or sensitivity to titanium, aluminum or vanadium
- Marked cervical instability on neutral resting lateral or flexion/extension radiographs; translation >3.5mm and/or >11° rotational difference from that of either adjacent level
- Severe spondylosis at the level to be treated, characterized by bridging osteophytes, loss of disc height >50%, an absence of motion (<2°) as this may lead to a limited range of motion and may encourage bone formation (e.g. heterotopic ossification, fusion)
- Severe facet joint arthropathy
- Significant cervical anatomical deformity or clinically compromised vertebral bodies at the affected level due to current or past trauma (e.g., by radiographic appearance of

fracture callus, malunion or nonunion) or disease (e.g., ankylosing spondylitis, rheumatoid arthritis)
- Significant kyphotic deformity or significant reversal of lordosis; or
- Symptoms attributed to more than one cervical level

WARNINGS

The PRESTIGE® LP Cervical Disc should only be used by surgeons experienced in the surgical procedure who have undergone adequate hands-on training with this specific device, and are familiar with the implant components, instruments, procedure, clinical applications, biomechanics, adverse events, and risks associated with the PRESTIGE® LP Cervical Disc. Medtronic will offer hands-on training to physicians prior to the first surgical treatment. A lack of adequate experience and/or training may lead to a higher incidence of adverse events, such as neurological complications.

Correct sizing and placement of the device is essential to optimal performance. Information regarding proper implant size selection, implant site preparation, and the use of instrumentation before, during and after PRESTIGE® LP surgery is provided in the PRESTIGE® LP Cervical Disc Surgical Technique manual. Users are advised to read and understand the surgical technique manual and instructions for use prior to surgery.

Due to the proximity of vascular and neurological structures to the implantation site, there are risks of serious or fatal hemorrhage and risks of neurological damage with the use of this device. Serious or fatal hemorrhage may occur if the great vessels are eroded or punctured during implantation or are subsequently damaged due to breakage of implants, migration of implants, or if pulsatile erosion of the vessels occurs because of close apposition of the implants.

Heterotopic Ossification (HO) is a potential complication associated with artificial cervical discs and could lead to reduced cervical motion.

PRECAUTIONS

The safety and effectiveness of this device has not been established in patients with the following conditions:

- Axial neck pain as solitary symptom
- Not skeletally mature
- Prior cervical spine surgery, including prior surgery at the index level
- Fused level adjacent to the level to be treated
- Facet joint pathology of involved vertebral bodies
- Spinal metastases
- Paget’s disease, osteopenia, osteomalacia, or other metabolic bone disease
- Overt or active bacterial infection, either local or systemic
- Chronic or acute renal failure or history of renal disease
- Taking medications known to potentially interfere with bone/soft tissue healing (e.g., steroids)
- Pregnant
- Diabetes mellitus requiring daily insulin management

- Extreme obesity as defined by the NIH Clinical Guidelines Body Mass Index (i.e., BMI ≥40)

The safety and effectiveness of the device has not been established in patients who have not undergone at least six weeks of non-operative treatment or had signs of progression or spinal cord/nerve root compression with continued non-operative care.

Implanted metal alloys release metallic ions into the body (especially those devices with metal-on-metal articulating surfaces). The long term effect of these ions on the body is not known.

Pre-operative
Patient selection is extremely important. In selecting patients for a total disc replacement, the following factors may negatively affect the success of the procedure: the patient's occupation or activity level; a condition of senility, mental illness, alcoholism or drug abuse; certain degenerative diseases (e.g., degenerative scoliosis or ankylosing spondylitis) that may be so advanced at the time of implantation that the expected useful life of the device is substantially diminished, and medical conditions that may affect postoperative management, such as Alzheimer's disease and emphysema.

In order to minimize the risk of periprosthetic vertebral fractures, surgeons must consider all co-morbidities, past and present, medications, previous treatments, etc. Surgeons should screen patients to determine if a DEXA bone mineral density measurement is necessary. If DEXA is performed, the patient should not receive the PRESTIGE® LP Cervical Disc (per the contraindications listed above) if the DEXA bone mineral density T-score is ≤ -1.0, as the patient may be osteoporotic or osteopenic.

The patient should be informed of the potential adverse effects (risk/complications) contained in this insert (see POTENTIAL ADVERSE EFFECTS OF THE DEVICE ON HEALTH).

Correct selection of the appropriate implant size is extremely important to ensure the placement and function of the disc. See the surgical technique manual for step-by-step instructions on the surgical technique, including determining the correct implant size. Inspect all instruments prior to surgery and replace any worn or damaged items.

Intra-operative
Use aseptic technique when removing the PRESTIGE® LP Cervical Disc components from the innermost packaging.

Use care when handling a PRESTIGE® LP Cervical Disc component to ensure it does not come in contact with objects that could damage the implant. Exercise care to ensure implantation instruments do not contact the highly polished articulating surfaces of the endplates. Damaged implants are no longer functionally reliable.

The PRESTIGE® LP Cervical Disc components should not be used with components or instruments of spinal systems from other manufacturers. See the surgical technique manual for step-by-step instructions.

The PRESTIGE® LP Cervical Disc implants are designed for single patient use only. Do not re-use, re-process, or re-sterilize the implants. Re-use, re-processing, or re-sterilization may compromise the structural integrity of the implant and the intended function of the device which could result in patient injury.

When preparing the disc space, remove anterior or posterior osteophytes as needed, taking care to minimize bone removal. Avoid excessive bone removal as this may weaken the vertebral endplates or vertebral body. Correct positioning of the rail punch is critical prior to performing the rail preparation step. Care should be taken to correctly position the rail punch during this step. Ensure proper alignment and placement of device components as misalignment may cause excessive wear and/or early failure of the device.

Post-operative

Patients in the clinical study were instructed to use non-steroidal anti-inflammatory drugs (NSAIDs) for two weeks postoperatively. It has been reported in the literature that short-term postoperative use of NSAIDs may reduce the instance of heterotopic ossification (HO). To reduce the instance of HO, it is recommended that the PRESTIGE® LP device be implanted in subjects able to tolerate the use of NSAIDs for two weeks post-operatively.

Patients should be instructed in postoperative care procedures and should be advised of the importance of adhering to these procedures for successful treatment with the device. Patients should be advised to avoid any activities that require repeated bending, lifting, and twisting, such as athletic activities. Gradual increase in physical activity will depend on individual patient progress.

POTENTIAL ADVERSE EFFECTS OF THE DEVICE ON HEALTH

Below is a list of the potential adverse effects (e.g., complications) associated with the use of the PRESTIGE® LP Cervical Disc identified from the PRESTIGE® LP Cervical Disc clinical study results, approved device labeling for other cervical total disc replacement devices, and published scientific literature including: (1) those associated with any surgical procedure; (2) those associated with anterior cervical spine surgery; and (3) those associated with a cervical artificial disc device, including the PRESTIGE® LP Cervical Disc. Some of the most common adverse events experienced by study patients were: neck and/or arm pain, dysesthesia, back and/or leg pain, musculoskeletal events (excluding spinal events), and difficulty swallowing. In addition to the risks listed below, there is also the risk that surgery may not be effective in relieving symptoms, or may cause worsening of symptoms. Additional surgery may be required to correct some of the adverse effects.

1. Risks associated with any surgical procedure include: abscess; cellulitis; wound dehiscence; wound, local, and/or systemic infection; wound necrosis; edema; hematoma; heart and vascular complications; hypertension; thrombosis; ischemia; embolism; thromboembolism; hemorrhage; thrombophlebitis; adverse reactions to anesthesia; pulmonary complications; organ, nerve or muscular damage; gastrointestinal or genitourinary compromise; seizure, convulsion, or changes to mental status; complications of pregnancy including miscarriage

and fetal birth defects; inability to resume activities of daily living including loss of consortium; and death.

2. Risks associated with anterior cervical spine surgery include: dysphagia; dysphonia; hoarseness; vocal cord paralysis; laryngeal palsy; sore throat; recurring aspirations; tracheal, esophageal, or pharyngeal perforation; airway obstruction; warmth or tingling in the extremities; neurologic complications including damage to nerve roots, other nerves, or the spinal cord possibly resulting in weakness, pain or even paralysis; dural tears or leaks; cerebrospinal fistula; discitis, arachnoiditis, and other types of inflammation; loss of disc height; loss of anatomic sagittal plane curvature or vertebral listhesis; scarring, herniation or degeneration of adjacent discs; surrounding soft tissue damage, spinal stenosis; spondylolysis; fistula; vascular damage and/or rupture; and headache.

3. Risks associated with a cervical artificial disc device, including the PRESTIGE® LP Cervical Disc, include: early or late loosening of the components; disassembly; bending or breakage of any or all of the components; implant migration; implant malpositioning; implant subsidence; loss of fixation; sizing issues with components; anatomical or technical difficulties; bone fracture; foreign body reaction to the implant including possible tumor formation, autoimmune disease, metallosis, and/or scarring; possible tissue reaction; bone resorption; bone formation (including heterotopic ossification) that may reduce spinal motion or result in a fusion, either at the treated level or at adjacent levels; development of new radiculopathy, myelopathy, or pain; tissue or nerve damage caused by improper positioning or placement of implants or instruments; bending or breakage of a surgical instrument, as well as the possibility of a fragment of a broken instrument remaining in the patient; loss of neurological function; decreased strength of extremities; decreased reflexes; cord or nerve root injury; loss of bowel and/or bladder control or other types of urological system compromise; interference with radiographic imaging because of the presence of the implant; and the need for subsequent surgical intervention.

NOTE: For the specific adverse events that occurred in the clinical study of the PRESTIGE® LP Cervical Disc, please see **Tables 8-10** and **12** below.

PHYSICIAN NOTE: Although the physician is the learned intermediary between the company and the patient, the important medical information given in this document should be conveyed to the patient.

CLINICAL STUDY

The clinical investigation of the PRESTIGE® LP Cervical Disc was conducted under an approved IDE #G040086. The study was a prospective, multi-center, non-randomized, unmasked, non-inferiority clinical trial conducted in the United States to compare the safety and effectiveness of the PRESTIGE® LP Cervical Disc to the standard of care (a legally marketed alternative with similar indications for use) anterior cervical discectomy and fusion (ACDF) using structural allograft and plate stabilization. The control group consisted of a non-randomized historical control group that received treatment with ACDF for reconstruction of the

disc from C3-C7 following single-level discectomy for intractable radiculopathy and/or myelopathy in the previous IDE randomized trial of the PRESTIGE® Cervical Disc (#G010188).

The study consisted of 280 patients treated with the investigational device at 20 investigational centers in the clinical trial, and 265 patients received the control treatment under a previous IDE study. Fifty-four additional subjects were enrolled at the same investigational sites, including: 30 patients enrolled into a Metal Ion Cohort (MI) for which metal ion analysis was conducted based on blood draws at each follow-up time point; and, 24 Continued Access (CA) patients.

Clinical Inclusion and Exclusion Criteria
To qualify for enrollment in the study, subjects met all of the following inclusion criteria and none of the following exclusion criteria.

Clinical Inclusion Criteria
Enrollment in the PRESTIGE® LP study was limited to patients who met the following inclusion criteria:

- Cervical degenerative disc disease defined as: intractable radiculopathy and/or myelopathy with at least one of the following items producing symptomatic nerve root and/or spinal cord compression documented by patient history [e.g., pain, functional deficit, and/or neurologic deficit and radiographic studies (e.g., computed tomography (CT), magnetic resonance imaging (MRI), x-rays, etc.)]
    - Herniated disc;
    - Osteophyte formation
- One level requiring surgical treatment;
- C3-C4 disc to C6-C7 disc level of involvement;
- Unresponsive to non-operative treatment for approximately six weeks or has the presence of progressive symptoms or signs of nerve root/spinal cord compression in the face of continued non-operative management;
- No previous surgical intervention at involved level or any subsequent, planned/staged surgical procedure at the involved or adjacent level(s);
- Is at least 18 years of age, inclusive, at the time of the surgery;
- Preoperative Neck Disability Index score of ≥ 30;
- Has a preoperative neck pain score of ≥ 20 on Preoperative Neck and Arm Pain Questionnaire;
- If a female of child-bearing potential, patient is not pregnant at the time of surgery;
- Is willing to comply with the study plan and sign the Patient Informed Consent Form.

Clinical Exclusion Criteria
Patients were <u>not</u> permitted to enroll in the PRESTIGE® LP study if any of the following exclusion criteria were present:

- Has a cervical spinal condition other than symptomatic cervical disc disease requiring surgical treatment at the involved level;
- Documented or diagnosed cervical instability defined by dynamic (flexion/extension) radiographs showing sagittal plane translation > 3.5mm or sagittal plane angulation > 20°;

- More than one cervical level requiring surgical treatment;
- Has a fused level adjacent to the level to be treated;
- Has severe pathology of the facet joints of the involved vertebral bodies;
- Previous surgical intervention at the involved level;
- Has previous diagnosis of osteopenia or osteomalacia;
- Has any of the following that may be associated with a diagnosis of osteoporosis (if "Yes" to any of the below risk factors, a DEXA Scan will be required to determine eligibility):
    - Postmenopausal non-Black female over 60 years of age and weighs less than 140 pounds
    - Postmenopausal female that has sustained a non-traumatic hip, spine, or wrist fracture
    - Male over the age of 70
    - Male over the age of 60 that has sustained a non-traumatic hip or spine fracture

  If the level of bone mineral density (BMD) is a T score of -3.5 or a T score of -2.5 with vertebral crush fracture, the patient is excluded from the study
- Has presence of spinal metastases;
- Has overt or active bacterial infection, either local or systemic;
- Has severe insulin dependent diabetes;
- Has chronic or acute renal failure or prior history of renal disease;
- Has fever (temperature > 101°F oral) at the time of surgery;
- Has a documented allergy or intolerance to stainless steel, titanium, or a titanium alloy;
- Is mentally incompetent (if questionable, obtain psychiatric consult);
- Is a prisoner;
- Is pregnant;
- Is an alcohol and/or drug abuser currently undergoing treatment for alcohol and/or drug abuse
- Has received drugs which may interfere with bone metabolism within two weeks prior to the planned date of spinal surgery (e.g., steroids or methotrexate) excluding routing perioperative anti-inflammatory drugs;
- Has a history of an endocrine or metabolic disorder known to affect osteogenesis (e.g., Paget's Disease, renal osteodystrophy, Ehlers-Danlos Syndrome, or osteogenesis imperfecta);
- Has a condition that requires postoperative medications that interfere with the stability of the implant, such as steroids. (This does not include low dose aspirin for prophylactic anticoagulation), excluding routine perioperative anti-inflammatory drugs;
- Has received treatment with an investigational therapy within 28 days prior to implantation surgery or such treatment is planned during the 16 weeks following implantation with the PRESTIGE® LP device.

Postoperative Care

The recommended post-operative care included avoidance of overhead lifting, heavy lifting, repetitive bending, and high-impact exercise or athletic activity for 60 days postoperatively. Avoidance of prolonged (beyond 2 weeks post-op) non-steroidal anti-inflammatory drug (NSAID) use was specified in the postoperative regimen, although the use of NSAIDs was

recommended for the first two weeks post-operatively. Post-operative bracing requirements were left to the discretion of the investigators and included the option for use of a soft collar as needed. The use of electrical bone growth stimulators was not recommended during the 24-month follow-up period. However, in a few cases where an electrical bone growth stimulator was utilized due to specific patient presentation, they were considered a supplemental form of therapy for spinal fusion surgery, and deemed failures included in the "Supplemental Fixation" Adverse Event category. Patients who smoked were encouraged to discontinue smoking.

Follow-Up Schedule

Patients were evaluated preoperatively (within 6 months of surgery), intraoperatively, and postoperatively at 6 weeks (±2 weeks), 3 months (±2 weeks), 6 months (± one month), 12 months (± two months), 24 months (± two months), and annually thereafter until the last subject enrolled in the study had been seen for their 24-month evaluation, as shown in **Table 2**. Complications and adverse events were evaluated over the course of the clinical trial. At each evaluation timepoint, the primary and secondary clinical and radiographic outcome parameters were evaluated. Success was determined from data collected during the initial 24 months of follow-up.

Table 2: Schedule of Study Assessments

	Pre-/Peri-Operative		Postoperative				
Procedure	**Pre-OP**	**Surgery/ Hospital Discharge**	**6 wks ±2 wks**	**3 mo. ±2 wks**	**6 mo. ± 1 mo.**	**12 mo. ± 2mo.**	**24 mo. ± 2 mo. & Beyond**
Preoperative Information							
Confirm Patient Eligibility	X						
Obtain Informed Consent	X						
Obtain HIPAA Authorization	X						
Case Report Forms							
Patient Enrollment	X						
Patient Qualification	X						
Preoperative Data	X						
Prior History Questionnaire	X						
Neurological Status	X		X	X	X	X	X
Preoperative Gait Assessment and Foraminal Compression Test	X						
Preoperative Patient Survey	X						
Preoperative Neck Disability Index	X						
Preoperative Neck and Arm Pain Questionnaire	X						
Health Status Questionnaire (SF-36)	X				X	X	X
Surgery Data		X					
Hospital Discharge		X					
Postoperative Data			X	X	X	X	X
Postoperative Patient Survey			X	X	X	X	X
Neck Disability Index			X	X	X	X	X
Postoperative Neck and Arm Pain Questionnaire			X	X	X	X	X
Postoperative Gait Assessment and Foraminal Compression Test			X	X	X	X	X
Adverse Event Form (if any)		X	X	X	X	X	X
Outstanding (Unresolved) Adverse Event (if any)		X	X	X	X	X	X
Patient Disposition			X	X	X	X	X
Imaging – Radiographs and Scans*							

	Pre-/Peri-Operative		Postoperative				
Procedure	**Pre-OP**	**Surgery/ Hospital Discharge**	**6 wks ±2 wks**	**3 mo. ±2 wks**	**6 mo. ± 1 mo.**	**12 mo. ± 2mo.**	**24 mo. ± 2 mo. & Beyond**
Anterior/Posterior X-ray	**X**	**X**	**X**	**X**	**X**	**X**	**X**
Lateral X-ray	**X**	**X**	**X**	**X**	**X**	**X**	**X**
Right/Left Lateral Bend X-rays	**X**		**X**	**X**	**X**	**X**	**X**
Flexion/Extension X-rays	**X**		**X**	**X**	**X**	**X**	**X**
CT and/or MRI	**X**						
DEXA Scan **	**X**						

* Patients who sign consent and are screened eligible, but who do not receive the PRESTIGE® LP device, were not required to have the preoperative radiographs obtained and forwarded to Medtronic.
** A DEXA Scan was only required if the patient had a risk factor that may be associated with a diagnosis of osteoporosis.

Clinical Endpoints

The safety of the PRESTIGE® LP Cervical Disc was assessed by comparison to the historical control group with respect to the nature and frequency of adverse events, secondary surgical procedures, as well as maintenance or improvement in neurological status.

The effectiveness of the PRESTIGE® LP Cervical Disc device was assessed using a composite definition of study success. The primary endpoint used for assessment of effectiveness was improvement in Neck Disability Index (NDI) pain/disability scores.

In addition, several radiograph-assisted assessments were considered in evaluating both safety and effectiveness including device subsidence, functional spinal unit (FSU) height maintenance, device migration, and device breakage.

According to the final IDE protocol, an individual patient in either treatment group was considered an overall success if the following criteria were met at 24 months:

1. An improvement (reduction) of at least 15 points from the baseline Neck Disability Index score;
2. Maintenance or improvement in neurological status;
3. Disc height (Functional Spinal Unit Height) success (FSU success)
4. No severe adverse event classified as implant-associated, surgical procedure-associated, or implant/surgical procedure-associated; and
5. No additional surgical procedure classified as “Failure”

An alternative analysis of the primary endpoint analysis was also conducted without the addition of FSU height as a success criterion.

Secondary endpoints, measured in both treatment groups, included Radiographic Success, neck pain (VAS), arm pain (VAS), quality of life (SF-36 PCS and MCS scores), patient satisfaction, patient global perceived effort, gait assessment (Nurick’s classification), and foraminal compression test. Additional measurements recorded were adjacent level stability, return to work, and doctor’s perception of results. Radiographic Succcess for maintenance of motion is defined as >4° but <20° of angular motion based on lateral flexion/extension radiographs and no radiographic evidence of bridging trabecular bone that forms a continuous bony connection with the vertebral bodies (bridging bone).

Criteria for the success of the control group was defined in a previous IDE study (G010188). Briefly, the same success criteria for the primary endpoints exist for the control group as the investigational group, with the exception that the secondary endpoint for radiographic success was defined by radiographic evidence of bone spanning the two vertebral bodies, existence of angular motion stability <4°, and no radiolucent lines covering more than 50% of the implant surface.

Accountability of PMA Cohort

The subject accountability data are summarized in **Table 3**. Please note that Continued Access Cohort (CA) and the Metal Ion Cohort (MI) were enrolled separately from the IDE Cohort at the same study sites. Safety and effectiveness data were collected for the IDE, Safety (IDE+CA+MI), and ACDF Control Cohorts while the statistical analyses were performed with the IDE Cohort in comparison to the control group.

Table 3: Subject Accountability

Number of Patients:	**12 Months (±2 Months)**			**24 Months (±2 Months)**		
	PRESTIGE® LP IDE Cohort	**ACDF Control**	**PRESTIGE® LP Safety Cohort**	**PRESTIGE® LP IDE Cohort**	**ACDF Control**	**PRESTIGE® LP Safety Cohort**
Enrolled	280	265	333	280	265	333
Theoretical FU	280	265	333	280	265	333
Cumulative Deaths [1]	0	2	0	0	2	0
Patients Evaluated Early [2]	0	0	0	0	0	0
Patients Not Yet Overdue	0	0	0	0	0	0
Expected[3]	280	263	333	280	263	333
Evaluable for Overall Success (% of Total Expected)	274 (97.9%)	223 (84.8%)	326 (97.9%)	271 (96.8%)	220 (83.7%)	322 (96.7%)
Evaluable for Overall Success, In Window (% of Total Expected)	271 (96.8%)	206 (78.3%)	321 (96.4%)	262 (93.6%)	201 (76.4%)	309 (92.8%)
Percent Follow-up	98.2%	87.1%	98.5%	97.1%	84.0%	97.3%

In addition to the study subjects described above, nineteen (19) subjects were consented but declined participation in the study prior to receiving the assigned treatment. The demographic and preoperative characteristics of the subjects who declined to participate in this study were comparable to the patients included in this study.

[1] Cumulative deaths are the total number of deaths of study patients at the 12- and 24-month time points. However, none of the deaths were believed to be in any way related to the study treatment.

[2] Patients that completed follow-up visits early before the visit window

[3] Expected = Theoretical minus Cumulative Deaths minus Patients Not Yet Overdue plus Patients Evaluated Early for Visit

Study Population Demographics and Baseline Parameters

Table 4 presents the summary statistics for demographic and baseline characteristics for the PRESTIGE® LP IDE Cohort, the ACDF Control, and PRESTIGE® LP Safety Cohort. The demographics of the study population are consistent with the demographics reported for prior cervical artificial disc studies conducted in the U.S.

The investigational and control treatment groups were very similar demographically, and there were no statistically significant differences ($p<0.05$) for any of the variables except for the use of tobacco and race. Current tobacco use was higher in the control group (34.7% versus 26.4%) as compared to the IDE Cohort. However, tobacco use was established through use of patient questionnaires which utilized a binary response (i.e., yes or no), and quantification of the extent or history of tobacco use was not established. Therefore, it is not possible to definitively ascertain whether there were any substantial confounding effects from tobacco use on patient outcomes. Regarding race differences among cohorts, there was a higher percentage of Caucasian subjects in the IDE Cohort compared to the control group (96.8% versus 91.7%).

Table 4: Study Patient Demographics and Baseline Characteristics

Variables	PRESTIGE® LP IDE Cohort (N=280)	ACDF Control (N=265)	PRESTIGE® LP Safety Cohort (N=333)	p-value (IDE vs. Control)
Age (years)	44.5 ± 8.8 Range: 23 - 78	43.9 ± 8.8 Range: 22 - 73	43.8 ± 9.0 Range: 23 – 78	0.369
Height (inches)	67.7 ± 4.1 Range: 60.0 – 77.0	67.5 ± 4.2 Range: 58.0 – 80.0	67.7 ± 4.0 Range: 60.0 – 77.0	0.622
Weight (lbs.)	186.9 ± 45.0 Range: 100.0 – 340.0	184.7 ± 41.5 Range: 98.0 – 328.0	187.3 ± 45.2 Range: 100.0 – 340.0	0.567
BMI (kg/m2)	28.5 ± 5.6 Range: 17.2 – 48.2	28.3 ± 5.1 Range: 19.0 – 53.6	28.5 ± 5.6 Range: 17.2 – 48.2	0.722
Sex Male (%) Female (%)	 129 (46.1%) 151 (53.9%)	 122 (46.0%) 143 (54.0%)	 155 (46.5%) 178 (53.5%)	1.000
Race Caucasian Black Asian Hispanic Other	 271 (96.8%) 7 (2.5%) 0 (0.0%) 1 (0.4%) 1 (0.4%)	 243 (91.7%) 13 (4.9%) 2 (0.8%) 6 (2.3%) 1 (0.4%)	 320 (96.1%) 10 (3.0%) 1 (0.3%) 1 (0.3%) 1 (0.3%)	**0.043**
Marital Status Single Married Divorced Separated Widowed	 40 (14.3%) 189 (67.5%) 42 (15.0%) 7 (2.5%) 2 (0.7%)	 32 (12.1%) 204 (77.0%) 24 (9.1%) 3 (1.1%) 2 (0.8%)	 47 (14.1%) 224 (67.3%) 51 (15.3%) 8 (2.4%) 3 (0.9%)	0.096
Education Level < High School High School > High School	 15 (5.4%) 57 (20.5%) 206 (74.1%)	 14 (5.3%) 77 (29.2%) 173 (65.5%)	 17 (5.1%) 78 (23.6%) 236 (71.3%)	0.062

Previous Neck Surgery Yes No	 3 (1.1%) 277 (98.9%)	 2 (0.8%) 263 (99.2%)	 3 (0.9%) 330 (99.1%)	1.000
Preoperative Medication use Non-Narcotics Weak Narcotics Strong Narcotics Muscle Relaxants	 208/280 (74.3%) 133/279 (47.7%) 62/279 (22.2%) 100/279 (35.8%)	 187/263 (71.1%) 127/263 (48.3%) 58/264 (22.0%) 114/264 (43.2%)	 246/333 (73.9%) 152/332 (45.8%) 68/332 (20.5%) 123/332 (37.0%)	 0.441 0.931 1.000 0.095
Preoperative Pain Status[4] Arm and Neck Pain Arm Pain Only Neck Pain Only	 255 (91.1%) 0 (0.0%) 25 (8.9%)	 238 (90.2%) 0 (0.0%) 26 (9.8%)	 299 (89.8%) 0 (0.0%) 34 (10.2%)	 0.769
Worker's Compensation	32/280 (11.4%)	35/365 (13.2%)	54/333 (16.2%)	0.602
Unresolved Spinal Litigation	34/280 (12.1%)	32/265 (12.1%)	61/333 (18.3%)	1.000
Current Tobacco Use	74/280 (26.4%)	92/265 (34.7%)	94/333 (28.2%)	**0.041**
Current Alcohol Use	150/280 (53.6%)	141/265 (53.2%)	172/333 (51.7%)	1.000
Preoperative Work Status	188/280 (67.1%)	166/265 (62.6%)	217/333 (65.2%)	0.282
Duration of Symptoms < 6 wks. 6 wks. – 6 mos. > 6 mos.	 22 (7.9%) 85 (30.4%) 173 (61.8%)	 15 (5.7%) 89 (33.6%) 161 (60.8%)	 24 (7.2%) 97 (29.1%) 212 (63.7%)	 0.494

The mean baseline pre-operative assessments for the PRESTIGE® LP IDE Cohort, Control Group, and PRESTIGE Safety Cohort are presented in **Table 5**. There were no statistical differences between the PRESTIGE® LP IDE Cohort and Control for NDI, SF-36 PCS, SF-36 MCS, neck pain, and arm pain. There were statistically significant differences in baseline motor neurologic status (38.2% - PRESTIGE® LP IDE Cohort; 59.5% - Control) and mean cervical range of motion (5.67º - PRESTIGE® LP IDE Cohort; 7.87º - Control). However, after propensity score adjustments, the variables appeared balanced between groups. Thus, differences in baseline symptoms were adjusted for in the analysis and are therefore unlikely to have led to significant bias in the reported results.

[4] Arm pain is defined as a subject having an arm pain score ≥20 and neck pain is defined as a subject having a neck pain score ≥20. If a subject has both an arm pain score ≥20 and a neck pain score ≥20, then this subject is considered as having "Arm and Neck Pain"; if a subject has a neck pain score ≥20 and an arm pain score < 20, then this subject is considered as having "Neck Pain Only"; if a subject has an arm pain score ≥20 and a neck pain score < 20, then this subject is considered as having "Arm Pain Only". Since neck pain score ≥20 is an inclusion criteria, there are no subjects with "Arm Pain Only". The PRESTIGE® LP Cervical Disc is indicated in skeletally mature patients for reconstruction of the disc at one level from C3-C7 following single-level discectomy for intractable radiculopathy (arm pain and/or a neurological deficit) with or without neck pain and is not indicated for treatment of isolated neck pain. No patients were included into the study with neck pain without any other symptoms.

Table 5: Preoperative Evaluation of Endpoints

Variables	PRESTIGE® LP IDE Cohort (N=280)	ACDF Control (N=265)	PRESTIGE® LP Safety Cohort (N=333)	p-value (IDE Cohort vs ACDF Control)
NDI	55.5 ± 14.7 Range: 30.0 – 98.0	56.4 ± 15.9 Range: 26.0 – 100.0	56.6 ± 15.0 Range: 30.0 – 98.0	0.498
SF-36 PCS	32.2 ± 7.4 Range: 14.3 – 57.9	32.0 ± 7.5 Range: 7.9 – 56.0	32.3 ± 7.1 Range: 14.3 – 57.9	0.777
SF-36 MCS	44.5 ± 11.5 Range: 16.5 – 68.3	42.7 ± 12.4 Range: 14.1 – 70.8	43.8 ± 11.9 Range: 16.5 – 68.3	0.079
Neck Pain Score	67.0 ± 20.8 Range: 20.0 – 100.0	69.3 ± 21.5 Range: 20.0 – 100.0	68.0 ± 20.8 Range: 20.0 – 100.0	0.191
Arm Pain Score	59.6 ± 26.3 Range: 0.0 – 100.0	62.4 ± 28.5 Range: 0.0 – 100.0	59.0 ± 27.1 Range: 0.0 – 100.0	0.236
Neurological Status (normal) • Motor • Sensory • Reflexes • Overall[5]	 107/280 (38.2%) 117/280 (41.8%) 186/280 (66.4%) 64/280 (22.9%)	 157/264 (59.5%) 134/264 (50.8%) 161/264 (61.0%) 79/264 (29.9%)	 135/333 (40.5%) 147/333 (44.1%) 200/333 (60.1%) 73/333 (21.9%)	 **< 0.001** 0.039 0.212 0.065
Baseline ROM angulation (º)	5.67 ± 3.69 Range: 0.27 – 18.10	7.87 ± 4.32 Range: 0.74 – 21.34	5.88 ± 3.78 Range: 0.27 – 19.47	**< 0.001**
Baseline ROM translation (mm)	N/A	0.26 ± 0.25 Range: 0.00 – 1.64	N/A	N/A

Surgery and Hospitalization

Table 6 summarizes the information related to the surgical procedures and postoperative hospitalizations of subjects. The most common treated surgical levels were C5-C6 and C6-C7.The mean operative times for the IDE and control treatment groups were 1.5 hours and 1.4 hours, respectively, which is a mean difference of 0.1 hours, or 6 minutes and is unlikely to represent any significant clinical difference. Additionally, investigational subjects were found to have similar estimated blood loss to the control group subjects (50.5 ml for IDE cohort and 49.4 ml for Safety cohort versus 57.5 ml for control group). The median blood loss was 35 ml for the IDE cohort versus 50 ml for both the Safety and control groups. The mean hospital stays of subjects in all treatment groups were similar (1.0 days for all groups). **Table 7** summarizes the PRESTIGE® LP device implanted by size and level.

[5] If at least one of the three components (motor, sensory, reflexes) is not normal, then overall is defined as "not normal", if all the components are normal, then overall is defined as "normal"

Table 6: Surgical Data

	PRESTIGE® LP IDE Cohort (N=280)	ACDF Control (N=265)	PRESTIGE® LP Safety Cohort (N=333)	Posterior Mean and 95% BCI[6] of the Difference of Mean between IDE Cohort and Control Group (lower, upper)
Spinal Level Treated				
C_{34} (%)	4 (1.4%)	10 (3.8%)	4 (1.2%)	N/A
C_{45} (%)	21 (7.5%)	15 (5.7%)	28 (8.4%)	N/A
C_{56} (%)	147 (52.5%)	149 (56.2%)	178 (53.5%)	N/A
C_{67} (%)	108 (38.6%)	91 (34.3%)	123 (36.9%)	N/A
Operative time (hrs)	1.5 ± 0.6 Range: 0.7 – 3.4 (n=280)	1.4 ± 0.5 Range: 0.6 – 3.4 (n=265)	1.4 ± 0.5 Range: 0.7 – 3.4 (n=333)	0.11 (0.02, 0.22)
Blood Loss (ml)	50.5 ± 73.5 Range: 3.0 – 700.0 Median: 35.0 (n=278)	57.5 ± 68.1 Range: 0.0 – 700.0 Median: 50.0 (n=263)	49.4 ± 67.9 Range: 3.0 – 700.0 Median 50.0 (n=333)	-4.7 (-16.8, 7.9)
Hospitalization (days)	1.0 ± 0.5 Range: 0.0 – 3.0 (n=280)	1.0 ± 0.5 Range: 0.0 – 4.0 (n=265)	1.0 ± 0.4 Range: 0.0 – 3.0 (n=333)	0.03 (-0.05, 0.11)
Median Return to Work Time (days)	40	60	42	N/A

Table 7: All PRESTIGE® LP Devices Implanted by Size and Level

	PRESTIGE® LP IDE Cohort					PRESTIGE® LP Safety Cohort				
	C3-C4	C4-C5	C5-C6	C6-C7	Total	C3-C4	C4-C5	C5-C6	C6-C7	Total
6mm x 12mm Disc (%)	1	4	15	11	**31 (11.1%)**	1	8	28	12	**49(14.7%)**
6mm x 14mm Disc (%)	1	10	65	37	**113 (40.4%)**	1	13	76	42	**132 (39.6%)**
6mm x 16mm Disc (%)	2	1	35	23	**61 (21.8%)**	2	1	37	23	**63 (18.9%)**
6mm x 18mm Disc (%)	0	0	0	0	**0 (0.0%)**	0	0	0	0	**0 (0.0%)**
7mm x 12mm Disc (%)[7]	0	0	1	1	**2 (0.7%)**	0	0	1	2	**3 (0.9%)**
7mm x 14mm Disc (%)	0	2	5	8	**15 (5.4%)**	0	2	9	11	**22 (6.6%)**
7mm x 16mm Disc (%)	0	4	16	9	**29 (10.4%)**	0	4	17	12	**33 (9.9%)**
7mm x 18mm Disc (%)	0	0	9	11	**20 (7.1%)**	0	0	9	11	**20 (6.0%)**
8mm x 12mm Disc (%)	0	0	0	0	**0 (0.0%)**	0	0	0	0	**0 (0.0%)**
8mm x 14mm Disc (%)	0	0	0	3	**3 (1.1%)**	0	0	0	4	**4 (1.2%)**
8mm x 16mm Disc (%)	0	0	1	4	**5 (1.8%)**	0	0	1	5	**6 (1.8%)**
8mm x 18mm Disc (%)	0	0	0	1	**1 (0.4%)**	0	0	0	1	**1 (0.3%)**
Total (%)	**4 (1.4%)**	**21 (7.5%)**	**147 (52.5%**	**108 (38.6%)**	**280 (100.0%)**	**4 (1.2)**	**28 (8.4%)**	**178 (53.5%)**	**123 (36.9%)**	**333 (100.0%)**

[6] BCI = Bayesian HPD Credible Interval

[7] The 7mm x 12mm PRESTIGE® LP Cervical Disc was a part of the size offerings in the IDE study, but is not a part of the size offerings available for market.

Safety and Effectiveness Results

Safety Results

The analysis of safety was based on the as-treated cohort of 598 total patients with surgery (333 PRESTIGE® LP "Safety" subjects consisting of 280 PRESTIGE® LP IDE Cohort subjects, as well as 54 subjects from the Continued Access (CA) and Metal Ion (MI) Cohorts[8]; and 265 ACDF control subjects). This was a non-randomized study and the ACDF group was a historical control. A summary of the total number of adverse events is shown in **Table 8**. Adverse events were classified by the independent Clinical Adjudication Committee (CAC) for severity and relationship to the device and/or surgical procedure.

Table 8: Summary of Adverse Events Up to the 24-Month Time Interval

Adverse Event Type	Measure	PRESTIGE® LP IDE Cohort (N=280)	ACDF Control (N=265)	PRESTIGE® LP Safety Cohort (N=333)	Posterior Mean and 95% BCI[9] of the Difference of Event Rate between IDE Cohort and ACDF Control[10]
All Adverse Events (AEs)	Patients (%)	257 (91.8%)	219 (82.6%)	306 (91.9%)	10.2% (4.1%, 16.2%)
	Events (Events/Patient)	1559 (5.57)	1198 (4.52)	1863 (5.59)	
Device or Device/Surgical Procedure Related AEs	Patients (%)	34 (12.1%)	41 (15.5%)	44 (13.2%)	-2.9% (-9.2%, 3.3%)
	Events (Events/Patient)	61 (0.22)	60 (0.23)	76 (0.23)	
Surgical Procedure Related AEs Only	Patients (%)	72 (25.7%)	71 (26.8%)	78 (23.4%)	-0.5% (-8.6%, 7.4%)
	Events (Events/Patient)	132 (0.47)	121 (0.46)	140 (0.42)	
Severe Adverse Events (Grade 3 or 4)	Patients (%)	133 (47.5%)	98 (37.0%)	163 (48.9%)	13.3% (3.5%, 21.8%)
	Events (Events/Patient)	433 (1.55)	267 (1.01)	518 (1.56)	
Severe Device or Device/Procedure-Related AEs (Grade 3 or 4)	Patients (%)	14 (5.0%)	13 (4.9%)	16 (4.8%)	0.7% (-3.0%, 4.6%)
	Events (Events/Patient)	33 (0.12)	22 (0.08)	40 (0.12)	

Table 9 provides summary data on the number of adverse events in each treatment group by treatment level, including post-hoc statistical analysis and comparison between the PRESTIGE® LP IDE Cohort and the ACDF control group through the 24-month time point using Frequentist methods. The percentage of subjects with adverse events was not statistically different between the two groups for all levels except for C5-C6; however, this difference was not clinically meaningful.

[8] One Metal Ion Cohort subject was also an IDE Cohort subject.
[9] BCI = Bayesian HPD Credible Interval
[10] 95% BCI of the difference of the event rate between the investigational group and control group was only determined for the "All Adverse Events" category because the analysis was pre-defined. All other analyses were not pre-defined.

Table 9: Summary of Total Adverse Events by Level Treated through Month 24- IDE and Safety Population

Treatment Level	PRESTIGE® LP IDE Cohort (N=280)	ACDF Control (N=265)	PRESTIGE® LP Safety Cohort (N=333)	Point Estimate and 95% Confidence Interval[11] of Difference of Adverse Rate between IDE Cohort and ACDF Control Cohort
C3-C4	4/4 (100%)	9/10 (90.0%)	4/4 (100.0%)	10.0% (-19.9%, 39.9%)
C4-C5	20/21 (95.2%)	12/15 (80.0%)	27/28 (96.4%)	15.2% (-5.6%, 36.1%)
C5-C6	135/147 (91.8%)	124/149 (83.2%)	163/178 (91.6%)	8.6% (1.1%, 16.2%)
C6-C7	98/108 (90.7%)	74/91 (81.3%)	112/123 (91.1%)	9.4% (-0.1%, 19.0%)

Table 10 reports adverse events from all patients to establish the safety profile of the device. Adverse events are listed in alphabetical order. Adverse event rates are based on the number of patients having at least one occurrence of an adverse event, divided by the number of patients in that treatment group. Subjects experiencing adverse events in more than one category are represented in each category in which they experienced an adverse event.

The overall adverse event rate was higher for subjects treated with the PRESTIGE® LP device (IDE Cohort, 91.8%; Safety Cohort, 91.9%) compared to the Control (82.6%) through 24 months. The adverse event rate between the PRESTIGE® LP IDE Cohort and the Control was statistically different with the 95% BCI for the difference of adverse events rates between the PRESTIGE® LP IDE Cohort and the ACDF Control Cohort being (4.1%, 16.2%), excluding 0. However, when comparing device-related adverse events, the rates are comparable (see **Table 10b** below). Although the rate of PRESTIGE® LP IDE subjects having at least one adverse event was statistically higher than the control group rate, the difference in adverse event rates was not considered to be clinically meaningful and this finding may be attributable to the higher follow-up rates (and potentially, higher reporting of events) for investigational subjects as compared to the ACDF control subjects. Specifically, note that the 24-month follow-up rates are 97.1% and 84.0% respectively for the PRESTIGE® LP IDE Cohort and ACDF Control Cohort. **Table 11** lists the brief definitions for all adverse events.

There were a total of three deaths in the investigational group and five deaths in the control group, of which two deaths occurred in the control group prior to 24 months (at the 12-month time point) and none in the investigational group prior to 24 months. Deaths were evaluated based upon available information and none of the deaths were believed to be in any way related to the study treatment.

[11] The 95% CI was provided using Frequentist Farrington and Manning methods

Table 10: Adverse Events in Pivotal Study Through 24 Months[12, 13]

	Surgery			Postoperative (1 day - <4 Weeks)			6 Weeks (≥4 Wks - <9 Weeks)			3 Months (≥9 Wks - <5 Months)			6 Months (≥5 Mos - <9 Months)			12 Months (≥9 Mos - <19 Months)			24 Months ((≥19 Mos - <30 Months))			Total (Up to 24 Month) # of Patients Reporting & Total adverse events		
Adverse Events	PRESTIGE® LP IDE Cohort	ACDF Control[14]	PRESTIGE® LP Safety Cohort	PRESTIGE® LP IDE Cohort	ACDF Control	PRESTIGE® LP Safety Cohort	PRESTIGE® LP IDE Cohort	ACDF Control	PRESTIGE® LP Safety Cohort	PRESTIGE® LP IDE Cohort	ACDF Control	PRESTIGE® LP Safety Cohort	PRESTIGE® LP IDE Cohort	ACDF Control	PRESTIGE® LP Safety Cohort	PRESTIGE® LP IDE Cohort	ACDF Control	PRESTIGE® LP Safety Cohort	PRESTIGE® LP IDE Cohort	ACDF Control	PRESTIGE® LP Safety Cohort	**PRESTIGE® LP IDE Cohort # Patients (% of 280) Total # Events**	**ACDF Control # Patients (% of 265) Total # Events**	**PRESTIGE® LP Safety Cohort # Patients (% of 333) Total # Events**
Anatomical / Technical Difficulty	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2 (0.7) 2	0 (0.0) 0	2 (0.6) 2
Cancer	0	0	0	1	1	1	0	0	0	0	0	0	1	0	1	3	0	3	0	1	2	3 (1.1) 5	2 (0.8) 2	5 (1.5) 7
Cardiac Disorders	0	0	0	2	2	2	2	1	3	0	2	0	3	3	3	4	3	5	10	9	11	16 (5.7) 21	18 (6.8) 20	19 (5.7) 24
Death	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 (0.0) 0	0 (0.0) 0	0 (0.0) 0
Dysphagia / Dysphonia	1	4	1	16	11	17	4	4	6	5	3	5	5	0	5	0	1	1	2	0	3	26 (9.3) 33	22 (8.3) 23	30 (9.0) 38
Gastrointestinal	2	7	2	8	7	8	1	3	2	4	4	7	3	2	7	20	21	22	17	24	20	35 (12.5) 55	38 (14.3) 68	43 (12.9) 68
Heterotopic Ossification	0	0	0	2	1	2	6	4	6	1	2	1	4	1	5	7	2	9	11	11	12	27 (9.6) 31	15 (5.7) 21	31 (9.3) 35
Implant Events	6	0	6	1	1	1	2	1	3	3	0	3	1	0	3	0	2	1	4	1	5	16 (5.7) 17	5 (1.9) 5	21 (6.3) 22
Infection	1	2	1	5	3	5	6	5	7	6	2	9	11	1	12	16	10	16	12	14	13	34 (12.1) 57	27 (10.2) 37	40 (12.0) 63
Neck and / or Arm Pain	3	1	4	31	16	35	43	19	57	57	49	77	37	40	50	68	50	84	36	38	46	144 (51.4) 275	124 (46.8) 213	184 (55.3) 353
Neurological	2	6	2	18	21	20	34	19	42	47	35	55	31	16	39	73	60	88	37	60	43	136 (48.6) 242	108 (40.8) 217	162 (48.6) 289
Non-Union	0	0	0	0	0	0	0	1	0	0	3	0	0	8	0	0	8	0	0	10	0	0 (0.0) 0	29 (10.9) 30	0 (0.0) 0
Other	5	3	8	19	14	22	12	13	14	24	16	28	29	9	38	55	21	58	33	57	39	93 (33.2) 177	81 (30.6) 133	110 (33.0) 207
Other Pain[15]	3	6	3	22	19	23	32	11	39	49	45	65	57	30	69	65	57	71	50	63	58	146 (52.1) 278	132 (49.8) 231	175 (52.6) 328
Respiratory	0	0	0	7	4	7	0	4	1	1	1	1	10	5	10	3	1	6	13	8	14	24 (8.6) 34	17 (6.4) 23	27 (8.1) 39
Spinal Event	0	0	0	19	8	22	22	6	34	20	25	25	26	15	31	44	20	53	41	29	47	83 (29.6) 172	55 (20.8) 103	106 (31.8) 212
Trauma	0	0	0	6	2	7	5	4	6	12	12	13	11	5	12	19	9	20	18	12	21	61 (21.8) 71	35 (13.2) 44	69 (20.7) 79
Urogenital	1	0	1	1	0	1	2	0	2	1	1	1	9	3	9	12	5	13	16	2	20	26 (9.3) 42	9 (3.4) 11	31 (9.3) 47
Vascular	3	1	4	1	0	1	1	0	1	0	1	0	2	1	2	2	1	2	4	0	4	12 (4.3) 13	4 (1.5) 4	13 (3.9) 14
Wound (Non-Infectious)	0	2	1	14	4	15	3	2	3	4	2	4	4	1	4	5	2	5	4	0	4	25 (8.9) 34	13 (4.9) 13	27 (8.1) 36
Any Adverse Event																						257 (91.8) 1559	219 (82.6) 1198	306 (91.9) 1863

[12] Based on 24-month cohort.

[13] Some adverse events may lead to additional surgeries or interventions. Refer to Table 4 for more information.

[14] Control=Single-level anterior interbody fusion procedure with allograft and plate stabilization. Non-randomized control arm from IDE study of PRESTIGE® Cervical Disc.

[15] Back and/or lower extremity (LE) pain adverse events (AEs) and Headache AE's were classified as "Other Pain" AEs for the PRESTIGE® LP IDE study.

Table 10b: Adverse Events Classified as Device-Related or Device/Surgical Procedure-Related According to the Clinical Adjudication Committee through Month 24 – Safety Population

	PRESTIGE® LP IDE Cohort (N=280)		ACDF Control (N=265)		PRESTIGE® LP Safety Cohort (N=333)	
Device Relationship of Adverse Event Determined by CAC	**Events N**	**Patients N (%)**	**Events N**	**Patients N (%)**	**Events N**	**Patients N (%)**
Dysphagia / Dysphonia	0	0 (0.0)	1	1 (0.4)	0	0 (0.0)
Heterotopic Ossification	4	4 (1.4)	3	2 (0.8)	6	6 (1.8)
Implant Events	16	15 (5.4)	5	5 (1.9)	20	19 (5.7)
Neck and / or Arm Pain	9	7 (2.5)	6	4 (1.5)	13	11 (3.3)
Neurological	11	9 (3.2)	7	7 (2.6)	14	11 (3.3)
Non-Union	0	0 (0.0)	27	27 (10.2)	0	0 (0.0)
Other	2	2 (0.7)	2	2 (0.8)	3	3 (0.9)
Other Pain	5	5 (1.8)	4	3 (1.1)	5	5 (1.5%)
Spinal Event	13	8 (2.9)	4	2 (0.8)	13	8 (2.4%)
Trauma	1	1 (0.4)	0	0 (0.0)	2	2 (0.6)
Wound (Non-Infectious)	0	0 (0.0)	1	1 (0.4)	0	0 (0.0)
Any Adverse Event	61	34 (12.1)	60	41 (15.5)	76	44 (13.2)

Table 11: Adverse Event Categories

Adverse Event Category	Definition
Anatomical/Technical Difficulty – Cervical Study Surgery	Anatomical or technical difficulty encountered during the original implantation of the PRESTIGE® device or control treatment device
Anatomical/Technical Difficulty – Cervical Non-Study Surgery	Anatomical or technical difficulty encountered during an additional surgery involving the cervical region, but did not involve the PRESTIGE® device or original control treatment device
Anatomical/ Technical Difficulty Non-Cervical	Technical problem encountered during an additional surgery that involved a region other than the cervical spine
Cancer	A malignancy or malignant tumor/neoplasm
Cardiac Disorders	Any condition of the heart
Death	Termination of life due to any cause
Dysphagia	Difficulty in swallowing
Dysphonia	Difficulty in speaking
Gastrointestinal	Any condition pertaining to the stomach and intestines
Heterotopic Ossification - Cervical	Event involving heterotopic ossification at any region of the cervical spine
Heterotopic Ossification - Non-Cervical	Event involving heterotopic ossification at any region of the spine that is not cervical or any other region of the body.
Implant Events - Malpositioning	Poor or inappropriate placement of the implant
Implant Events - Displacement	Incomplete or partial dislocation of the implant
Implant Events - Loosening	Wear around the implant and/or loosening of the implant surface
Implant Events - Breakage	Breakage of any implant or implant component
Implant Events - Other	Event that is implant-related, but does not meet the definition of malpositioned implant, implant displacement, implant loosening, or implant breaking
Infection - Superficial	An infection near the surface of the surgical incision
Infection - Deep	An infection below the fascia at the surgical incision
Infection - Other Wound	Infection occurring in other surgical wound not involving the study
Infection - Hematoma	Swelling or mass of blood that has become infected
Infection - CSF Leak	Infection resulting from the leakage of CSF
Infection - Systemic	Infection pertaining to the whole body
Infection - Urinary Tract	Infection of any part of the urinary system
Infection - Other	Any infection not listed above
Pain - Neck	Pain (including stiffness, strain, tightness) in the neck
Pain - Upper Extremities	Pain (including stiffness, strain, tightness) in the shoulder, arm, wrist or hand
Pain - Neck and Upper Extremities	Pain (including stiffness, strain, tightness) in the neck and shoulder, arm, wrist, or hand
Pain - Other	Pain (including stiffness, strain, tightness) in an area that is not of cervical spine etiology (e.g., abdominal pain of unknown etiology, headache, flank pain, bursitis).
Other	Event not associated with any other categories (e.g., weight loss, tinnitus, substance abuse, insomnia).
Respiratory	Ailments or symptoms associated with respiration or the respiratory system
Spinal Event – Cervical Study Surgery	Event involving the treated level of cervical spine
Spinal Event – Cervical Non-Study Surgery	Event involving one or more cervical spine level(s), with the exception of the treated level
Spinal Event - Non-Cervical	Event involving one or more spine levels other than cervical spine
Trauma	Physical injury caused by a physical force or traumatic event (e.g. motor vehicle accident, fall, etc.)
Urogenital	Any condition of, relating to, affecting, treating, or being the organs or functions of excretion and reproduction

Vascular – injury (intraoperative)	Injury to a vascular structure that is sustained during the course of the operative procedure
Vascular – Vertebral artery	Injury to vertebral artery occurring at any time
Vascular - Other	Disorder or condition in which the vascular system is affected
Wound (Non-Infectious)	Any issue of surgical incision, such as hematoma, excluding infection

Bayesian analyses were conducted on all adverse events using non-informative priors. The results are presented in **Table 12** with 95% Bayesian Credible Intervals (BCI) for the difference in adverse event rates (PRESTIGE® LP IDE – ACDF). BCIs that exclude zero indicate statistical differences in the adverse event rates between the PRESTIGE® LP IDE cohort and the ACDF Control group while the BCIs that include zero fail to conclude that this is a statistical difference in the adverse event rates between the two groups. Based on the BCIs, statistical differences were noted between groups for the adverse event rates in the following categories: heterotopic ossification, implant events, neurological, non-union, spinal events, trauma, urogenital, vascular, and wound (non-infectious). All are statistically higher for the PRESTIGE® LP IDE Cohort except for non-union which was statistically higher for the control group.

Table 12: Bayesian Comparison of Posterior Probabilities of Adverse Events

Adverse Event	Patients Experiencing Adverse Events (%)			Posterior Mean and 95% HPD of Adverse Event Rate		Posterior Mean and 95% BCI[16] of Difference of Adverse Event Rate between LP IDE Cohort and ACDF Control
	IDE Cohort	ACDF Control	Safety Cohort	IDE Cohort	ACDF Control	IDE - ACDF
Anatomical / Technical Difficulty	2 (0.7%)	0 (0.0%)	2 (0.6%)	0.5% (0.0%, 1.4%)	0.0% (0.0%, 0.1%)	0.5% (0.0%, 1.4%)
Cancer	3 (1.1%)	2 (0.8%)	5 (1.5%)	1.0 (0.1%, 2.3%)	0.6% (0.0%. 1.6%)	0.4% (-1.2%, 2.0%)
Cardiac Disorders	16 (5.7%)	18 (6.8%)	19 (5.7%)	5.4% (2.8%, 8.2%)	7.0% (4.0%, 10.4%)	-1.6% (-6.0%, 2.9%)
Dysphagia / Dysphonia	26 (9.3%)	22 (8.3%)	30 (9.0%)	9.3% (5.9%, 12.9%)	8.2% (4.8%, 11.6%)	1.0% (-4.2%, 6.1%)
Gastrointestinal	35 (12.5%)	38 (14.3%)	43 (12.9%)	12.9% (9.0%, 17.3%)	13.7% (9.3%, 17.9%)	-0.8% (-7.2%, 5.1%)
Heterotopic Ossification	27 (9.6%)	15 (5.7%)	31 (9.3%)	10.2% (6.7%, 14.0%)	5.0% (2.5%, 7.7%)	5.2% (0.5%, 10.1%)*
Implant Events	16 (5.7%)	5 (1.9%)	21 (6.3%)	5.7% (3.0%, 8.7%)	1.8% (0.4%, 3.4%)	3.9% (0.6%, 7.4%)*
Infection	34 (12.1%)	27 (10.2%)	40 (12.0%)	12.0% (8.2%. 16.1%)	10.3% (6.6%, 14.2%)	1.7% (-3.8%, 7.5%)
Neck and / or Arm Pain	144 (51.4%)	124 (46.8%)	184 (55.3%)	51.9% (45.9%, 57.9%)	46.2% (39.7%, 52.3%)	5.7% (-3.3%, 15.0%)
Neurological	136 (48.6%)	108 (40.8%)	162 (48.6%)	49.4% (43.2%, 55.6%)	39.8% (33.7%, 46.1%)	9.6% (0.6%, 18.9%)*
Non-Union	0 (0.0%)	29 (10.9%)	0 (0.0%)	0.0%	11.4% (7.3%, 15.4%)	-11.3% (-15.4%, -7.3%)*
Other	93 (33.2%)	81 (30.6%)	110 (33.0%)	33.6% (27.9%, 39.5%)	30.1% (24.4%, 36.0%)	3.5% (-4.9%, 12.1%)
Other Pain	146 (52.1%)	132 (49.8%)	175 (52.6%)	51.3% (45.3%, 57.4%)	50.7% (44.2%, 56.8%)	0.6% (-8.5%, 9.7%)
Respiratory	24 (8.6%)	17 (6.4%)	27 (8.1%)	8.3% (4.9%, 11.7%)	6.5% (3.6%, 9.7%)	1.9% (-2.9%, 6.7%)
Spinal Event	83 (29.6%)	55 (20.8%)	106 (31.8%)	31.4% (25.7%, 37.2%)	19.0% (13.8%, 23.8%)	12.4% (4.5%, 20.3%)*
Trauma	61 (21.8%)	35 (13.2%)	69 (20.7%)	21.2% (16.4%, 26.3%)	13.5% (9.4%, 17.9%)	7.6% (0.7%, 14.4%)*
Urogenital	26 (9.3%)	9 (3.4%)	31 (9.3%)	8.7% (5.2%, 12.2%)	3.5% (1.4%, 5.8%)	5.2% (1.1%, 9.9%)*
Vascular	12 (4.3%)	4 (1.5%)	13 (3.9%)	4.6% (2.3%, 7.3%)	1.2% (0.2%, 2.5%)	3.4% (0.6%, 6.5%)*
Wound (Non-Infectious)	25 (8.9%)	13 (4.9%)	27 (8.1%)	9.6% (6.0%, 13.1%)	4.2% (1.9%, 6.6%)	5.3% (0.7%, 9.7%)*
Any adverse Event	257 (91.8%)	219 (82.6%)	306 (91.9%)	92.3% (89.0%, 95.4%)	82.0% (77.2%, 86.9%)	10.2% (4.1%, 16.2%)*

*Asterisk denotes statistical difference.

[16] BCI = Bayesian HPD Credible Interval

Table 13 summarizes the secondary interventions in the PRESTIGE® LP device and control treatment groups that occurred at or before the 24-month post-operative interval. Revisions, removals, and supplemental fixations were considered second surgery failures in the clinical study. Reoperations were not considered second surgery failures in the study. **Table 13** also presents the Bayesian statistical comparison of secondary surgeries between the PRESTIGE® LP IDE device and control treatment groups.

Overall, there were a greater number of subjects undergoing secondary surgical procedures at the index level in the ACDF control group [21 (7.9 %)] compared to the PRESTIGE® LP IDE [14 (5.0%)] and Safety Cohorts [15 (4.5%)]. Bayesian statistical comparison of secondary surgeries between the PRESTIGE® LP IDE Cohort and ACDF control treatment groups were performed (if zero is excluded from the 95% BCI of the difference of the event rates, the event rates are considered to be statistically different between the two groups). The only statistical difference between the control and PRESTIGE® LP Safety Cohort occurred in the Supplemental Fixation category, with the investigational cohort requiring fewer supplemental fixation procedures than the control cohort. However, this category also included use of external bone stimulators as "supplemental fixation," which may inflate the numbers in the ACDF control group, as all "supplemental fixation" patients were considered failures due to secondary surgery. Among the eight ACDF control subjects who had supplemental fixation, two had supplemental fixation without using any external bone stimulators, one had "supplemental fixation" with and without using an external bone stimulator and 5 subjects had "supplemental fixation" with external bone stimulators only. Excluding the 5 subjects only using external bone stimulators, the supplemental fixation rates are comparable between the two treatment groups.

Table 13. Secondary Interventions and Surgical Procedures Up to the 24-Month Visit.

	Surgery			Postoperative (1 day - <4 Weeks)			6 Weeks (≥4 Wks - <9 Weeks)			3 Months (≥9 Wks - <5 Months)			6 Months (≥5 Mos - <9 Months)			12 Months (≥9 Mos- <19 Months)			24 Months ((≥19 Mos- <30 Months))			Total 24 Month # of Patients Reporting & Total adverse events						Posterior Mean and 95% HPD of Secondary Surgery Rate		Posterior Mean and 95% BCI[17] of Difference of Secondary Surgery Rate between LP IDE Cohort and ACDF Control
Complication	IDE	Control	Safety Cohort	IDE	Control	Safety Cohort	IDE	Control	Safety Cohort	IDE	Control	Safety Cohort	IDE	Control	Safety Cohort	IDE	Control	Safety Cohort	IDE	Control	Safety Cohort	IDE **# Patients (% of 280)**	IDE **Total # Events**	**Control # Patients (% of 265)**	**Control Total # Events**	Safety Cohort **# Patients (% of 333**	**Safety Cohort Total # Events**	**PRESTIGE® LP IDE Cohort**	**ACDF Control**	**PRESTIGE(R) LP IDE – ACDF Control**
Revisions[18]	0	0	0	0	1	0	1	0	1	0	3	0	0	0	0	0	1	0	0	0	0	1 (0.4)	1	5 (1.9)	5	1 (0.3)	1	0.4% (0.0%, 1.1%)	1.6% (0.3%, 3.3%)	-1.3% (-3.2%, 0.4%)
Removals[19]	0	0	0	1	0	1	1	0	1	1	1	1	3	2	3	3	6	4	1	2	1	10 (3.6)	10	11 (4.2)	11	11 (3.3)	11	3.7% (1.6%, 6.0%)	3.8% (1.6%, 6.2%)	-0.1% (-3.7%, 3.2%)
Supplemental Fixations[20]	0	0	0	0	0	0	0	0	0	0	0	0	1	3	1	1	5	1	0	1	0	2 (0.7)	2	8 (3.0)	9	2 (0.6)	2	0.5% (0.0%, 1.3%)	3.2% (1.3%, 5.5%)	-2.7% (-5.0%, -0.5%)
Reoperations[21]	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	1	2	0	2	3 (1.1)	3	2 (0.8)	2	3 (0.9)	3	1.1% (0.1%, 2.3%)	0.6% (0.0%, 1.6%)	0.4% (-1.2%, 2.1%)
Total	0	0	0	1	1	1	2	1	2	1	4	1	4	5	4	5	13	6	3	3	3	14 (5.0)	16	21 (7.9)	27	15 (4.5)	17	5.3% (2.8%, 8.2%)	7.1% (4.1%, 10.4%)	-1.9% (-6.4%, 2.3%)

[17] BCI = Bayesian HPD Credible Interval

[18] A procedure that adjusts or in any way modifies the original implant configuration (e.g., adjusting position of the original configuration, removal with replacement with the same type of study implant).

[19] A procedure that removes one or more components of the original implant configuration without replacement with the same type of trial implant. Removals include elective removals.

[20] A procedure at the involved level in which additional spinal devices not approved as part of the protocol are placed. This categorization of Supplemental Fixations includes supplemental therapies (i.e. external bone growth stimulators). There were a total of six (6) external bone growth stimulators used in the ACDF Control group. Three (3) occurred at six (6) months, and three (3) occurred at 12 months. No external bone growth stimulators were used in the IDE or Safety Cohorts. Please note that since this additional device was used, and included as a supplemental fixation, these patients were considered failures in the Primary Endpoint.

[21] A procedure that involves any surgical procedure at the involved level that does not remove, modify, or add any components and that is not considered a Removal. Revision, or Supplemental Fixation.

Table 14: Secondary Surgical Interventions at the Index Level– Procedure Details

Group	Cause/Adverse Event	Action	Secondary Surgical Intervention Category	Time to Index Level Surgery
Safety Cohort IDE	C4-C5 displaced device with fractured vertebrae; subject's bone scan was positive for osteopenia	C4-C5 explant of PRESTIGE® LP artificial disc followed by anterior cervical fusion	Removal	01 Day- <4 Weeks (01 day)
Safety Cohort IDE	C4-C5 PRESTIGE® LP artificial disc compressed into the vertebral body and rotated within the disc space secondary to a fall	C4-C5 explant of PRESTIGE® LP artificial disc followed by anterior cervical fusion	Removal	06 Weeks (49 days)
Safety Cohort IDE	C5-C6 device extrusion	C5-C6 explant of PRESTIGE LP® artificial disc and replacement with new PRESTIGE LP® artificial disc; different size	Revision	06 Weeks (56 days)
Safety Cohort IDE	C6-C7 large recurrent disc herniation with cord compression and severe stenosis	C6-C7 explant of PRESTIGE® LP artificial disc with anterior cervical discectomy and fusion	Removal	03 Months (150 days)
Safety Cohort IDE	Severe neck pain	C5-C6 explant of PRESTIGE® LP artificial disc followed by anterior cervical fusion	Removal	06 Months (159 days)
Safety Cohort IDE	C6-C7 cervical radiculopathy with cervical stenosis	C6-C7 explant PRESTIGE® LP artificial disc,C5-C7 anterior cervical discectomy and fusion	Removal	06 Months (215 days)
Safety Cohort IDE	C5-C6 artificial disc dislodging posteriorly	C5-C6 explant of PRESTIGE® LP artificial disc followed by anterior cervical fusion	Removal	06 Months (259 days)
Safety Cohort IDE	C3-C4 foraminal stenosis; possible C4 impingement; C4-C5 foraminal disc protrusion	C3-C4 posterior cervical fusion	Supplemental Fixation	06 Months (262 days)
Safety Cohort IDE	C5-C6 herniated disc with right upper extremity radiculopathy	C6-C7 explant PRESTIGE® LP artificial disc, C5-C7 anterior cervical discectomy and fusion	Removal	12 Months (423 days)
Safety Cohort IDE	Radiating paracervical pain and right shoulder pain	C4-C5 explant of PRESTIGE® LP artificial disc, followed by anterior cervical fusion	Removal	12 Months (469 days)
Safety Cohort IDE	Neck pain radiating to shoulders	C6-C7 explant of PRESTIGE® LP artificial disc; anterior cervical fusion	Removal	12 Months (518 days)
Safety Cohort IDE	C3-C4, C5-C6 foraminal stenosis	C3-C4, C5-C6 left posterior laminectomy	Reoperation	12 Months (528 days)
Safety Cohort Continued Access	C7 subsidence into the vertebral body and lucency as a result of traumatic event	C6-C7 explant of PRESTIGE® LP artificial disc, anterior microdiscectomy and fusion	Removal	12 Months (546 days)

Group	Cause/Adverse Event	Action	Secondary Surgical Intervention Category	Time to Index Level Surgery
Safety Cohort IDE	C6-C7 cervical radiculopathy with cervical stenosis. Additionally, the patient had removal due to the same diagnosis at 215 days as referenced above.	C5-C7 posterior cervical fusion; C6-C7 posterior cervical foraminotomy	Supplemental Fixation	12 Months (568 days)
Safety Cohort IDE	C4-C5, C5-C6 left-sided neural foraminal narrowing as a result of a fall	C4-C5, C5-C6 left posterior foraminotomy	Reoperation	24 Months (708 days)
Safety Cohort IDE	C6-C7 disc herniation; C5-C6 osteophyte	C5-C6 explant of PRESTIGE® LP artificial disc; C5-C7 partial vertebrectomy and anterior cervical discectomy and fusion	Removal	24 Months (732 days)
Safety Cohort IDE	C5-C6 radiculopathy	C5-C6 left foraminotomy	Reoperation	24 Months (743 days)
Safety Cohort IDE	Lifting injury; C5-C6 changes (not specified, pre-existing) bilateral upper extremity radiculopathy; axial neck pain	C5-C6 explant of PRESTIGE® LP artificial disc with fusion, C6-C7 artificial disc replacement	Removal	36 Months (1161 days)
Safety Cohort IDE	Subsidence into C6, C4-C5 facet arthropathy, C4-C6 osteophytic spurring and stenosis, C6-C7 herniated nucleus pulposus	C5-C6 explant of PRESTIGE® LP artificial disc; C4-C7 anterior cervical discectomy and fusion	Removal	48 Months (1394 days)
Safety Cohort IDE	C4-C6 foraminal stenosis	C6-C7 explant PRESTIGE® LP artificial disc, C4-C6 anterior cervical discectomy and fusion	Removal	60 Months (1646 days)
Safety Cohort IDE	Shortened muscle syndrome resulting in shoulder and arm pain aggravated by altercation at work	C6-C7 explant of PRESTIGE® LP artificial disc, C5-C6 anterior decompression; C5-C7 anterior cervical fusion	Removal	84 Months (2431 days)
Control	C5-C6 residual foraminal stenosis; hematoma	C5-C6 left forminatomy and hematoma removal	Revision	01 Day- <4 Weeks (02 days)
Control	C5 small piece of disc material or hematoma per MRI, deltoid weakness	C5-C6 posterior microforaminotomy (C5)	Reoperation	06 Weeks (43 days)
Control	Esophageal perforation/fistula, abscess	C5-C6 removal of the cervical plate and allograft; exploration and debridement of an esophageal abscess, repair of an esophageal fistula	Removal	03 Months (63 days)
Control	C5-C6 herniated nucleus pulposus	C5-C7 anterior cervical discectomy and fusion	Revision	03 Months (88 days)
Control	C7 distribution pain and numbness	C5-C7 fusion	Revision	03 Months (98 days)

Group	Cause/Adverse Event	Action	Secondary Surgical Intervention Category	Time to Index Level Surgery
Control	C6-C7 disc herniation	C5-C6 Removal of cervical plate, exploration of fusion at C5-C6; C6-C7 anterior cervical discectomy and fusion	Revision	03 Months (140 days)
Control	C5-C6 Delayed nonunion	C5-C6 bone growth stimulator	Supplemental Fixation-External Bone Growth Stimulator	06 Months (183 days)
Control	C5-C6 nonunion	C5-C6 bone growth stimulator	Supplemental Fixation-External Bone Growth Stimulator	06 Months (185 days)
Control	C6-C7 pseudoarthrosis	C6-C7 bone growth stimulator	Supplemental Fixation-External Bone Growth Stimulator	06 Months (207 days)
Control	C5-C6 nonunion, failed fusion with motion present	C5-C6 removal of the cervical plate and allograft; partial corpectomy C5 with anterior cervical fusion	Removal	06 Months (241 days)
Control	Posterior cervical region and trapezius pain, spasms, and bilateral arm pain	C5-C6 removal of the cervical plate and allograft; anterior cervical fusion; bilateral foraminotomies	Removal	06 Months (272 days)
Control	C5-C6, C6-C7 nonunion	C5-C7 bone growth stimulator	Supplemental Fixation-External Bone Growth Stimulator	12 Months (278 days)
Control	C5-C6 nonunion	C5-C6 removal of the cervical plate and allograft; partial corpectomy at C6, microdissection, and fusion	Removal	12 Months (284 days)
Control	C5-C6 pseudoarthrosis	C5-C6 removal of the cervical plate and allograft; allograft and plate replaced	Removal	12 Months (293 days)
Control	C5-C6, C6-C7 nonunion; wound infection	C5-C7 removal of the cervical plate and allograft; revision anterior arthrodesis	Removal	12 Months (326 days)
Control	C5-C6 pseudoarthrosis	C5-C6 external bone growth stimulator	Supplemental Fixation-External Bone Growth Stimulator	12 Months (352 days)

Group	Cause/Adverse Event	Action	Secondary Surgical Intervention Category	Time to Index Level Surgery
Control	C6-C7 nonunion	C6-C7 bone growth stimulator	Supplemental Fixation-External Bone Growth Stimulator	12 Months (372 days)
Control	C5-C6 possible facet disease; neck pain with right posterior scapular pain	C6-C7 removal of the cervical plate to facilitate C5-C6 anterior cervical discectomy and fusion	Elective Removal	12 Months (385 days)
Control	C6-C7 non-union with motion present, neck and shoulder pain	C6-C7 removal of the cervical plate and allograft; C4-C7 anterior cervical fusion	Removal	12 Months (399 days)
Control	Shoulder pain and numbness in fingers	C5-C6 removal of the cervical plate to facilitate C6-C7 cervical discectomy and fusion	Elective Removal	12 Months (407 days)
Control	Neck and arm pain; possible recurrent nerve compression	C5-C6 posterior cervical fusion	Supplemental Fixation	12 Months (474 days)
Control	Involuntary movements thumb; gait abnormalities; upper and lower extremity deficits and findings suggestive of upper motor neuron lesion; body "jumps" when lays down; urinary incontinence	C4, C5, C6, C7, T1 laminectomies	Reoperation	12 Months (506 days)
Control	Cervical spondylosis, neck pain, glenohumeral joint	C5-C6 removal of the cervical plate to facilitate C6-C7 anterior cervical discectomy and fusion	Elective Removal	12 Months (513 days)
Control	C5-C6, C6-C7 nonunion	C5-C7 posterior fusion	Supplemental Fixation	12 Months (535 days)
Control	C5-C6 pseudoarthrosis	C5-C6 posterolateral cervical fusion	Supplemental Fixation	24 Months (613 days)
Control	C5-C6 discogenic pain confirmed via discogram	C6-C7 removal of the cervical plate to facilitate C5-C6 anterior cervical discectomy and fusion	Elective Removal	24 Months (756 days)
Control	C5-C6 lucency	C5-C6 removal of the cervical plate and allograft; anterior cervical fusion with autologous stem cells, and bone marrow aspiration (left anterior ilium)	Removal	24 Months (840 days)
Control	C5-C6, C6-C7 lateral stenosis	C5-C6, C6-C7 right foraminotomies with C6-C7 nerve root decompression	Revision	36 Months (1050 days)
Control	C6-C7 delayed fusion; possibly work related	C6-C7 posterior fusion	Supplemental Fixation	36 Months (1094 days)
Control	C6-C7 osteophytes, cord edema, herniated nucleus pulposus, spinal stenosis, radiating neck pain, motor vehicle accident	C5-C6 removal of the cervical plate to facilitate C6-C7 anterior cervical discectomy and fusion	Elective Removal	36 Months (1211 days)
Control	C6-C7 pseudoarthrosis; resorption of graft	C6-C7 posterior fusion	Supplemental Fixation	36 Months (1259 days)

Group	Cause/Adverse Event	Action	Secondary Surgical Intervention Category	Time to Index Level Surgery
Control	C6-C7 pseudoarthrosis; resorption of graft	Supplemental Fixation-C6-C7 bone growth stimulator	Supplemental Fixation-External Bone Grown Stimulator	48 Months (1391 days)
Control	C6-C7 herniation, foramen impingement, osteophyte compression	C5-C6 removal of the cervical plate to facilitate C6-C7 anterior discectomy and osteophytectomy with anterior interbody fusion	Elective Removal	48 Months (1512 days)
Control	Neck and left arm pain	C5-C6 removal of the cervical plate to facilitate C6-C7 foraminotomy with arthrodesis	Elective Removal	48 Months (1560 days)
Control	C3-C4 severe spondylitic changes with bilateral spurring, left paracentral disc osteophyte complex, bilateral foraminal encroachment, and C4-C5 severe spondylitic changes	C5-C6 removal of the cervical plate to facilitate C3-C5 anterior cervical discectomy and fusion	Elective Removal	60 Months (1665 days)
Control	C5-C6 herniation, C4-C6 foraminal stenosis	C6-C7 removal of the cervical plate to facilitate C5-C6 discectomy with anterior plate	Elective Removal	60 Months (1679 days)
Control	C5-C6 degenerative changes possible small disc protrusion, osteophytes	C6-C7 removal of the cervical plate to facilitate C5-C6 anterior cervical discectomy and fusion	Elective Removal	60 Months (1729 days)
Control	C3-C4 protrusion, hypertrophy; C5-C6 mild stenosis, protrusion, segment degeneration	C4-C5 removal of the cervical plate to facilitate C3-C4, C5-C6 anterior cervical discectomy and fusion	Elective Removal	60 Months (1806 days)
Control	C6-C7 spondylosis, disc bulge	C5-C6 removal of the cervical plate to facilitate C6-C7 artificial disc replacement	Elective Removal	72 Months (2242 days)
Control	C5-C6 osteophytosis and arthropathy	C6-C7 removal of the cervical plate to facilitate C5-C6 anterior cervical discectomy and fusion	Elective Removal	84 Months (2425 days)
Control	C6 right radiculopathy, C6-C7 foraminal narrowing	C5-C6 right anterolateral foraminotomy	Reoperation	84 Months (2486 days)
Control	C5-C6 epidural abscess	C5-C6 laminectomy with evacuation of epidural abscess	Reoperation	84 Months (2514 days)

Neurological status was evaluated by assessment of motor function, sensory function, and reflexes. Overall neurological status at 6 weeks, 3 months, 6 months, 12 months and 24 months is provided for the PRESTIGE® LP and Control subjects in **Table 15 b**elow. Neurologic success was defined as maintenance or improvement in neurologic status at 24 months compared to baseline. The success rates at 24 months postoperative were 93.3%, 94.0% and 83.6% for the PRESTIGE® LP IDE Cohort, PRESTIGE® LP Safety Cohort and Control group, respectively. As shown in **Table 16**, the neurological success rate in the PRESTIGE® LP IDE Cohort is

statistically superior to that of the ACDF Control group with the posterior probability of superiority being 99.9%.

Table 15: Neurological Success

Time Point	Variable	PRESTIGE® LP IDE Cohort (N=280) Success (%)	ACDF Control (N=265) Success (%)	PRESTIGE® LP Safety Cohort (N=333) Success (%)
6 Weeks	Overall			
	Improved	187 (67.3%)	144 (56.7%)	228 (69.1%)
	Stable	65 (23.4%)	78 (30.7%)	74 (22.4%)
	Deteriorated	26 (9.4%)	32 (12.6%)	28 (8.5%)
3 Months	Overall			
	Improved	194 (70.3%)	136 (56.4%)	237 (72.3%)
	Stable	63 (22.8%)	74 (30.7%)	72 (22.0%)
	Deteriorated	19 (6.9%)	31 (12.9%)	19 (5.8%)
6 Months	Overall			
	Improved	195 (72.2%)	141 (61.8%)	238 (73.9%)
	Stable	59 (21.9%)	64 (28.1%)	68 (21.1%)
	Deteriorated	1 (5.9%)	23 (10.1%)	16 (5.0%)
12 Months	Overall			
	Improved	198 (72.8%)	133 (58.8%)	241 (74.4%)
	Stable	59 (21.7%)	61 (27.0%)	68 (21.0%)
	Deteriorated	15 (5.5%)	32 (14.2%)	15 (4.6%)
24 Months	Overall			
	Improved	196 (72.6%)	123 (55.9%)	238 (74.1%)
	Stable	56 (20.7%)	61 (27.7%)	64 (19.9%)
	Deteriorated	18 (6.7%)	36 (16.4%)	19 (5.9%)

Effectiveness Results

Primary Effectiveness Analysis

The effectiveness variables represent those measurements that describe the clinical outcomes of the study subjects. The primary endpoint is a composite endpoint that takes into account the success of NDI, Neurological Status, FSU height and the absence of serious implant related adverse events or secondary surgeries. Additional secondary endpoints include radiographic success, indicators of pain relief, general health status, and doctor and subject perceptions of outcomes. **Please note that this was a non-randomized study with a historical control.**

Study success was expressed as the number of individual subjects categorized as a success divided by the total number of subjects evaluated. **Table 16** describes the observed success rates and Bayesian analyses for individual outcome parameters and overall success. Observed success rates are the 24-month outcomes of the clinical trial. Posterior means for each group can be interpreted as the average chance of success at 24 months, and the posterior mean of the difference can be interpreted as the average difference in the chance of success at 24 months. When a patient receives the PRESTIGE® LP device, the average chance of overall success (without FSU) as defined in the clinical study at 24 months is 78.9%. Given the results of the trial, there is a 95% probability that the chance of success ranges from 74.1% to 84.0%. When a patient receives the control treatment, the average chance of overall success (without FSU) at 24 months is 67.8%. Given the results of the trial, there is a 95% probability that the chance of success ranges from 61.2% to 74.0%. The average difference in the change of success (without FSU) between the IDE cohort and the ACDF control is 11.1% with 95% probability that this difference will fall in range of 2.7% to 19.6%. For overall success (without FSU) the posterior probability of non-inferiority of the IDE cohort to the ACDF control group is essentially 100%, reaching the primary objective.

All success probabilities were for the 24-month outcomes, and posterior probabilities of success were calculated using Bayesian statistical methods and are presented in **Table 16**.

Table 16: Observed Success Rates and Posterior Probabilities of Success at 24 Months

Primary Outcome Variable	24-Month Observed Success Rate		24-Month Posterior Mean (95% HPD Credible Interval)			24-Month Posterior Probabilities (IDE vs Control)	
	IDE Cohort	ACDF Control	IDE Cohort	ACDF Control	IDE Cohort – ACDF Control	Non-Inferiority	Superiority
NDI	237/270 (87.8%)	177/219 (80.8%)	87.2% (83.1%, 91.2%)	82.4% (77.0%, 87.5%)	4.8% (-2.0%, 11.8%)	~100.0%	91.2%
Neurological Status	252/270 (93.3%)	184/220 (83.6%)	93.4% (90.3%, 96.2%)	83.6% (78.2%, 88.5%)	9.9% (3.8%, 16.1%)	~100.0%	99.9%
FSU	205/224 (91.5%)	156/164 (95.1%)	91.7% (87.8%, 95.2%)	95.1% (91.6%, 98.3%)	-3.4% (-8.5%, 2.1%)	99.2%	9.7%
Overall Success (without FSU)[22]	215/271 (79.3%)	147/220 (66.8%)	78.9% (74.1%, 84.0%)	67.8% (61.2%, 74.0%)	11.1% (2.7%, 19.6%)	~100.0%	99.5%
Overall Success (with FSU)[23]	159/226 (70.4%)	108/171 (63.2%)	68.9% (62.7, 75.1%)	65.7% (58.3%, 73.4%)	3.2% (-7.0%, 13.4%)	99.5%	73.6%

Statistical superiority of the PRESTIGE® LP Cervical Disc group was demonstrated for overall success (when not including FSU data) and the neurological component for the population studied in the clinical trial at 24 months postoperatively since the posterior probability of superiority for both endpoints are over 99.0%, exceeding the threshold of 95.0%. With FSU data included, the average chance of overall success, as defined in the clinical study at 24 months, is 68.9%. These results are lower than when excluding FSU data. Given the results of the trial, there is a 95% probability that the chance of success ranges from 62.7% to 75.1%. However, the average chance of success for the control group (with FSU) is also lower, at 65.7%, with a 95% probability that the chance of success ranges from 58.3% to 73.4%. The average difference in the chance of success between the IDE cohort and the ACDF control group is 3.2% with 95% probability that this difference will fall in range of -7.0% to 13.4%. Thus, while the rates of success were lower for the investigational device when including FSU data, the success rates were also lower for the control group, and the probability of non-inferiority for the investigational device was statistically achieved. Thus it can be stated that the investigational device is statistically non-inferior to the control procedure as the posterior probability of non-inferiority is 99.5%.

The NDI, FSU, and overall success (with FSU) variables were found to be statistically non-inferior at 24 months postoperatively.

The time course of overall success for each treatment group is shown in **Table 17**.

[22] A success is a patient who had successes in NDI and neurological status and had no additional surgery classified as 'failure' and no serious device or device/surgery associated adverse event.

[23] A success is a patient who had successes in NDI, neurological status, and FSU and had no additional surgery classified as 'failure' and no serious device or device/surgery associated adverse event.

Table 17: Time Course of Observed Success Rates

Primary Outcome Variable	3-Month Observed Success Rate		6-Month Observed Success Rate		12-Month Observed Success Rate		24-Month Observed Success Rate	
	IDE Cohort	ACDF Control	IDE Cohort	ACDF Control	IDE Cohort	ACDF Control	IDE Cohort	ACDF Control
NDI	241/276 (87.3%)	174/235 (74.0%)	241/271 (88.9%)	173/224 (77.2%)	241/272 (88.6%)	176/222 (79.3%)	237/270 (87.8%)	177/219 (80.8%)
Neurological Status	257/276 (93.1%)	210/241 (87.1%)	254/270 (94.1%)	205/228 (89.9%)	257/272 (94.5%)	194/226 (85.8%)	252/270 (93.3%)	184/220 (83.6%)
FSU	229/235 (97.4%)	182/182 (100%)	227/230 (98.7%)	174/175 (99.4%)	225/233 (96.6%)	164/172 (95.3%)	205/224 (91.5%)	156/164 (95.1%)
Overall Success (without FSU) [24]	223/277 (80.5%)	154/239 (64.4%)	224/271 (82.7%)	158/224 (70.5%)	227/274 (82.8%)	150/223 (67.3%)	215/271 (79.3 %)	147/220 (66.8%)
Overall Success (with FSU) [25]	187/238 (78.6%)	113/181 (62.4%)	189/233 (81.1%)	119/174 (68.4%)	187/234 (79.9%)	110/173 (63.6%)	159/226 (70.4 %)	108/171 (63.2 %)

Table 18 provides overall success data for each treatment group stratified by the treated level including post-hoc statistical analysis and comparisons between the PRESTIGE® LP IDE Cohort and the ACDF Control group through the 24-month time point using Frequentist methods. Overall success rates (without FSU) were not significantly different between the PRESTIGE® LP IDE Cohort and ACDF Control group at any treatment level except for at the C6-C7 level, in which the IDE cohort had a significantly higher success rate compared to the control group. Overall success rates (with FSU) at 24 months were not significantly different between the IDE cohort and control group at any treatment level.

Table 18: Overall Success by Level Treated at 24 Months

	PRESTIGE® LP IDE Cohort (N = 280)	ACDF Control (N = 265)	Point Estimate and 95% Confidence Interval[26] of Difference of Success Rate between IDE Cohort and ACDF Control Cohort
Overall Success (without FSU) [27]			
• C3-C4	• 3/4 (75.0%)	• 4/8 (50.0%)	• 25.0% (-34.2%, 84.2%)
• C4-C5	• 16/20 (80.0%)	• 6/11 (54.5%)	• 25.5% (-7.9%, 58.9%)
• C5-C6	• 106/140 (75.7%)	• 84/125 (67.2%)	• 8.5% (-2.4%, 19.4%)
• C6-C7	• 90/107 (84.1%)	• 53/76 (69.7%)	• 14.4% (2.2%, 26.5%)

[24] A success is a patient who had successes in NDI and neurological status and had no additional surgery classified as 'failure' and no severe device or device/surgery associated adverse event.
[25] A success is a patient who had successes in NDI, neurological status, and FSU and had no additional surgery classified as 'failure' and no severe device or device/surgery associated adverse event.
[26] The 95% CI was provided using Frequentist Farrington and Manning methods
[27] A success is a patient who had successes in NDI and neurological status and had no additional surgery classified as 'failure' and no severe device or device/surgery associated adverse event.

	PRESTIGE® LP IDE Cohort (N = 280)	ACDF Control (N = 265)	Point Estimate and 95% Confidence Interval[26] of Difference of Success Rate between IDE Cohort and ACDF Control Cohort
Overall Success (with FSU) [28]			
• C3-C4	• 2/3 (66.7%)	• 4/5 (80.0%)	• -13.3% (-75.3%, 48.6%)
• C4-C5	• 12/19 (63.2%)	• 5/10 (50.0%)	• 13.2% (-24.6%, 50.9%)
• C5-C6	• 93/133 (69.9%)	• 72/115 (62.6%)	• 7.3% (-4.5%, 19.1%)
• C6-C7	• 52/71 (73.2%)	• 27/41 (65.9%)	• 7.3% (-10.1%, 24.9%)

Overall success data stratified by patient race at the 24-month time point is also provided in **Table 19**. Due to the relatively small numbers of non-Caucasians treated in the IDE, statistical conclusion for outcomes based on race cannot be reliably made and will be evaluated further as part of an Enhanced Surveillance Study Medtronic Sofamor Danek will conduct for 10 years postmarket.

Table 19: Overall Success by Patient Race at 24 months

Overall Success	PRESTIGE® LP IDE Cohort		ACDF Control		PRESTIGE® LP Safety Cohort	
	Caucasian (N = 271)	Non-Caucasian (N = 9)	Caucasian (N = 243)	Non-Caucasian (N = 22)	Caucasian (N = 320)	Non-Caucasian (N = 13)
Overall Success (without FSU) [29]	209/263 (79.5%)	6/8 (75.0%)	140/205 (68.3%)	7/15 (46.7%)	248/311 (79.7%)	10/12 (83.3%)
Overall Success (with FSU) [30]	155/219 (70.8%)	4/7 (57.1%)	103/159 (64.8%)	5/12 (41.7%)	190/262 (72.5%)	8/11 (72.7%)

Secondary Effectiveness Analysis

Table 20 describes the results of the secondary effectiveness endpoints at 24 months.

[28] A success is a patient who had successes in NDI, neurological status, and FSU and had no additional surgery classified as 'failure' and no severe device or device/surgery associated adverse event.

[29] A success is a patient who had successes in NDI and neurological status and had no additional surgery classified as 'failure' and no severe device or device/surgery associated adverse event.

[30] A success is a patient who had successes in NDI, neurological status, and FSU and had no additional surgery classified as 'failure' and no severe device or device/surgery associated adverse event.

Table 20: Secondary Endpoints and Other Measurements[31]

	24-Month Observed Success Rate		24-Month Posterior Mean (95% HPD Credible Interval)		
Variable	**PRESTIGE® LP IDE Cohort**	**ACDF Control**	**IDE Cohort**	**ACDF Control**	**IDE Cohort – ACDF Control**
Neck pain					
Success	260 (96.3%)	213 (97.3%)	96.4%	97.3%	-1.0%
Failure	10 (3.7%)	6 (2.7%)	(94.0%, 98.4%)	(95.1%, 99.2%)	(-4.3%, 2.3%)
Arm pain					
Success	258 (96.3%)	208 (95.0%)	96.7%	94.7%	1.9%
Failure	10 (3.7%)	11 (5.0%)	(94.4%, 98.6%)	(91.6%, 97.5%)	(-1.8%, 5.8%)
SF-36 PCS					
Success	221 (83.7%)	186 (86.1%)	82.8%	87.6%	-4.7%
Failure	43 (16.3%)	30 (13.9%)	(78.0%, 87.4%)	(82.7%, 91.8%)	(-11.3%, 2.1%)
SF-36 MCS					
Success	205 (77.7%)	150 (69.4%)	78.7%	68.2%	10.5%
Failure	59 (22.3%)	66 (30.6%)	(73.5%, 83.6%)	(61.7%, 74.7%)	(2.0%, 19.0%)
Patient Perceived Effect					
Complete recovery	127 (47.0%)	88 (40.2%)			
Much improved	107 (39.6%)	89 (40.6%)	Not Available	Not Available	Not Available
Doctor Perception					
Excellent	194 (71.6%)	125 (56.8%)			
Good	62 (22.9%)	69 (31.4%)	Not Available	Not Available	Not Available
Gait					
Success	268 (99.3%)	219 (99.5%)			
Failure	2 (0.7%)	1 (0.5%)	Not Available	Not Available	Not Available
Work Status					
Median days until return to work	40	60	Not Available	Not Available	Not Available

For patients receiving the PRESTIGE® LP Cervical Disc device, the mean angular motion values at 12 and 24 months postoperative, respectively, were 7.85° (n=266) and 7.51° (n=264) as compared to a preoperative value of 5.67° (n=260). The range of motion values measured from flexion/extension radiographs at 24 months for the PRESTIGE® LP Cervical Disc patients are presented in the histogram below. This histogram uses values obtained by rounding the recorded range of motion for each subject to the nearest integer.

[31] Patient accounting in this table is affected by subjects lost to follow up and/or missing data.

Figure 1: Histogram of PRESTIGE® LP Cervical Disc Angular Range of Motion at 24 Months

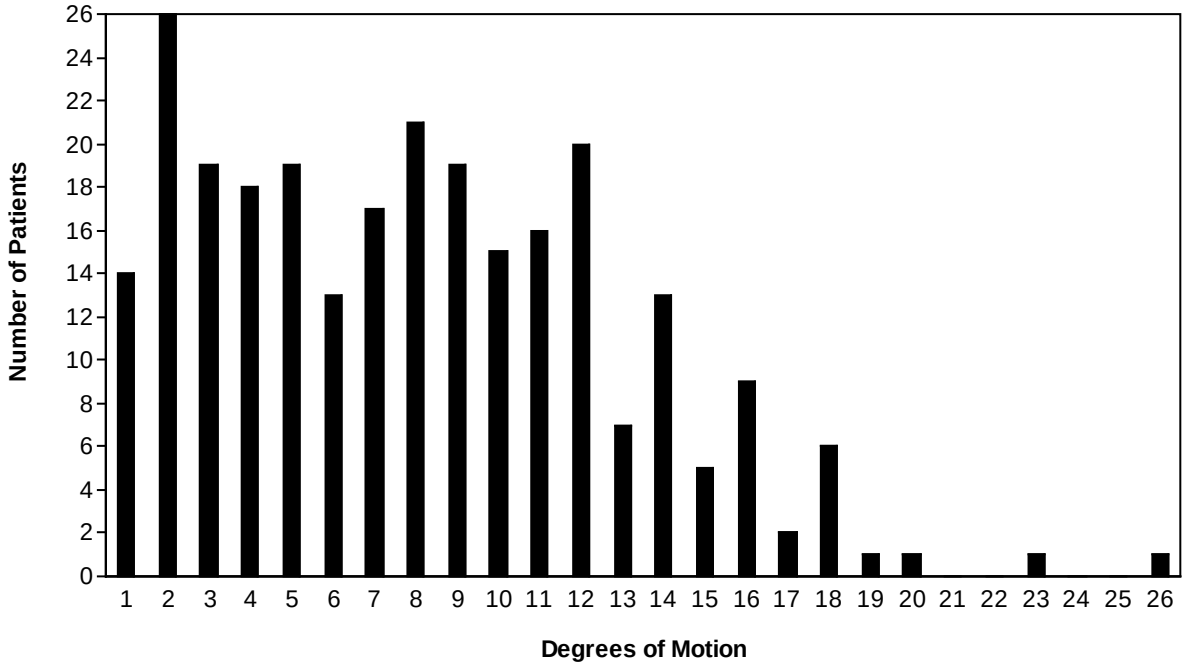


Table 21 presents data on change in range of motion from the preoperative baseline for each time point by treatment group.

Table 21: Time Course of Radiographic Change in Range of Motion

Time Point	Change in Angular Range of Motion	PRESTIGE® LP IDE (N =280)	Control (N=265)
6 Weeks	Increased (≥2º)	120 (48.0%)	2 (1.4%)
	No Change(-2º to 2º)	70 (28.0%)	5 (3.4%)
	Decreased ≤-2º)	60 (24.0%)	138 (95.2%)
3 Months	Increased (≥2º)	128 (51.0%)	0 (0.0%)
	No Change(-2º to 2º)	71 (28.3%)	10 (6.4%)
	Decreased ≤-2º)	52 (20.7%)	146 (93.6%)
6 Months	Increased (≥2º)	119 (49.2%)	0 (0.0%)
	No Change(-2º to 2º)	72 (29.8%)	8 (5.3%)
	Decreased ≤-2º)	51 (21.1%)	144 (94.7%)
12 Months	Increased (≥2º)	131 (52.4%)	0 (0.0%)
	No Change(-2º to 2º)	71 (28.4%)	5 (3.5%)
	Decreased ≤-2º)	48 (19.2%)	138 (96.5%)
24 Months	Increased (≥2º)	118 (48.2%)	0 (0.0%)
	No Change(-2º to 2º)	68 (27.8%)	7 (5.0%)
	Decreased ≤-2º)	59 (24.1%)	134 (95.0%)

Table 22 presents radiographic disc height success at each time point for each treatment group. Disc height success is achieved when the change in the six-week post-operative height from the post-operative height is greater than or equals -2mm in either the anterior or posterior measurements. Disc height success was similar between the two treatment groups with greater than 90% of the patients in both groups achieving success at each time point.

Table 22: Time Course of Radiographic Disc Height Success[32]

Time Point	PRESTIGE® LP IDE (N = 280)	Control (N = 265)
3 Months	229/235 (97.4%)	182/182 (100.0%)
6 Months	227/230 (98.7%)	174/175 (99.4%)
12 Months	225/233 (96.6%)	164/172 (95.3%)
24 Months	205/224 (91.5%)	156/164 (95.1%)

Available radiographs for the PRESTIGE® LP study patients were assessed for bridging bone (Criteria was comparable to Class IV assessment on the McAfee and Mehren classification system for Heterotopic Ossification) between the vertebral bodies of the implanted motion segment. Bridging was defined as evidence of a continuous bony connection from the superior vertebral body to the inferior vertebral body laterally, anteriorly, and/or posteriorly. The radiographic results are shown in **Table 23**. More than 90% of the PRESTIGE® LP IDE patients displayed no signs of bridging bone at each time point, with 94.1% of the patients exhibiting no bridging bone at 24 months.

Table 23: Time Course of Bridging Bone

	Bridging Bone	PRESTIGE® LP IDE (N = 280)
6 Weeks	No	278 (100.0%)
	Yes	0 (0%)
3 Months	No	274 (99.6%)
	Yes	1 (0.4%)
6 Months	No	268 (99.3%)
	Yes	2 (0.7%)
12 Months	No	269 (98.2%)
	Yes	5 (1.8%)
24 Months	No	253 (94.1%)
	Yes	16 (5.9%)

[32] Disc height success is defined as Postoperative Height minus Six-Week Postoperative Height ≥ -2mm either at the anterior or posterior measurements

The percentage of PRESTIGE® LP patients with range of motion >4º and ≤ 20º for patients with and without bridging bone at 24 months is described in **Table 24**.

Table 24: Range of Motion (ROM) at 24 Months by Patients with Bridging Bone

	PRESTIGE® LP IDE Cohort			PRESTIGE® LP Safety Cohort		
	No Bridging Bone (N=253)	Bridging Bone (N=16)	Total (N=269)	No Bridging Bone (N=303)	Bridging Bone (N=18)	Total (N=321)
Patients w/ 4º < ROM ≤ 20º	179/248 (72.2%)	2/16 (12.5%)	181/264 (68.6%)	219/298 (73.5%)	3/18 (16.7%)	222/316 (70.3%)
% Patients ROM ≤ 4º	67/248 (27.0%)	14/16 (87.5%)	81/264 (30.7%)	77/298 (25.8%)	15/18 (83.3%)	92/316 (29.1%)
% Patients ROM > 20º	2/248 (0.8%)	0/16 (0.0%)	2/264 (0.8%)	2/298 (0.7%)	0/18 (0.0%)	2/316 (0.6%)

An analysis of the correlation between the degree of segmental motion, NDI, neck and arm pain scores was also performed, and statistically significant correlations were noted, but the magnitudes of the correlations were small.

Conclusions Drawn from the Study Data

The clinical results from the use of the investigational device, the PRESTIGE® LP Cervical Disc, were shown to be statistically non-inferior to the control group results. The scientific evidence that has been presented here supports the safety and effectiveness of the PRESTIGE® LP Cervical Disc in the treatment of intractable radiculopathy and/or myelopathy at a single-level from C3 to C7. The study demonstrated that the treatment of intractable radiculopathy and/or myelopathy with the PRESTIGE® LP Cervical Disc was as effective as the control treatment (fusion with bone graft and plate stabilization). The results for the primary effectiveness outcome parameters for the investigational group were non-inferior to the control group. The investigational group demonstrated superiority to the control group for the neurological component and overall success (without FSU). The PRESTIGE® LP Cervical Disc was able to achieve comparable or better clinical performance while maintaining motion at the involved cervical level.

MRI INFORMATION

Non-clinical testing demonstrated that the PRESTIGE® LP Cervical Disc is MR Conditional. A patient with this device can be scanned safely immediately after placement under the following conditions:

Static Magnetic Field

-Static magnetic field of 3.0-Tesla
-Maximum spatial gradient magnetic field of 3000-Gauss/cm or less
-Whole body average specific absorption rate (SAR) of 2.9 –W/kg and peak SAR level of 6.0-W/kg

MRI-Related Heating
In non-clinical testing, the PRESTIGE® LP Cervical Disc produced the following temperature rise during MRI performed for 15-min in the 3.0-Tesla (3.0-Tesla/128-MHz, Excite, HDx, Software 14X.M5, General Electric Healthcare, Milwaukee, WI) MR system:

Highest temperature change +1.6°C

Therefore, the MRI-related heating experiments for the PRESTIGE® LP Cervical Disc at 3.0-Tesla using a transmit/receive RF body coil at an MR system reported whole body averaged SAR of 2.9 -W/kg (i.e., associated with a calorimetry measured whole body averaged value of 2.7-W/kg) indicated the greatest amount of heating that occurred in association with these specific conditions was equal to or less than +1.6°C. MRI-Heating test for static magnetic field less than 3-Tesla has not been evaluated.

Artifact Information
MR image quality may be compromised if the area of interest is in the same area or relatively close to the position of the PRESTIGE® LP Cervical Disc System Implant. The artifact size information for a 3-Tesla MR system is, as follows:

Pulse Sequence	T1-SE	T1-SE	GRE	GRE
Signal Void Size	1401mm^2	1093mm^2	2101mm^2	2422mm^2
Imaging Plane	Parallel	Perpendicular	Parallel	Perpendicular

Therefore, optimization of MR imaging parameters to compensate for the presence of this device may be necessary. The maximum artifact size (as seen on the gradient echo pulse sequence) extends approximately 15mm relative to the size and shape of the PRESTIGE® LP Cervical Disc implant.

PACKAGING

PRESTIGE® LP Cervical Disc implants are supplied pre-packaged and sterile, using gamma irradiation. Packages for each of the components should be intact upon receipt. Once the seal on the sterile package has been broken, the product should not be re-sterilized. All instrument sets should be carefully checked for completeness and all components should be carefully checked to ensure there is no damage prior to use. Damaged packages or products should not be used, and should be returned to Medtronic.

HANDLING

All instruments and implants should be treated with care. Improper use or handling may lead to damage and/or possible malfunction. Instruments should be checked to ensure that they are in working order prior to surgery. All instruments should be inspected prior to use to ensure that there is no unacceptable deterioration such as corrosion, discoloration, pitting, cracked seals, etc. Non-working or damaged instruments should not be used, and should be returned to Medtronic.

CLEANING AND DECONTAMINATION

Disassembly instructions, as well as detailed cleaning instructions for the PRESTIGE® LP reusable instruments, can be found at http://manuals.medtronic.com/. Refer to the PRESTIGE® LP Reusable Instruments instructions for use - M708348B183 which include instructions for disassembly, cleaning, and sterilization instructions for the PRESTIGE® LP reusable instruments.

STERILIZATION

The PRESTIGE® LP Cervical Disc implants are supplied in a sterile form. Never steam sterilize or in any other way attempt to re-sterilize or re-use the PRESTIGE® LP implants.

The PRESTIGE® LP instruments are supplied in non-sterile form unless otherwise indicated on the package label. Sterilization instructions for the PRESTIGE® LP reusable instruments can be found at http://manuals.medtronic.com/. Refer to the PRESTIGE® LP Reusable Instruments instructions for use - M708348B183, which include instructions for disassembly, cleaning, and sterilization instructions for the PRESTIGE® LP reusable instruments.

Only sterile products should be placed in the operative field.

Implant package contents (superior and inferior disc components) are provided sterile. Instrument set contents are provided non-sterile.

DEVICE RETRIEVAL EFFORTS

Should it be necessary to remove a PRESTIGE® LP Cervical Disc device, call Medtronic prior to the scheduled surgery for product/tissue retrieval information. Refer to the PRESTIGE® LP Cervical Disc Surgical Technique for step-by-step instructions on the required technique for device retrieval and instructions for returning the explanted device to Medtronic. All explanted devices must be returned to Medtronic for analysis.

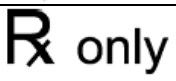
PRODUCT COMPLAINTS

Any health care professional (e.g., customer or user of this system of products) who has any complaints or who has experienced any dissatisfaction in the product quality, identity, durability, reliability, safety, effectiveness, and/or performance, should notify the distributor or Medtronic. Further, if any of the implanted spinal system component(s) ever "malfunctions" (i.e., does not meet any of its performance specifications or otherwise does not perform as intended), or is suspected of doing so, the distributor should be notified immediately. If any Medtronic product ever malfunctions and may have caused or contributed to the death or serious injury of a patient, the distributor should be notified immediately by telephone, fax, or written correspondence. When filing a complaint, provide the component(s) name and number, lot number(s), your name and address, the nature of the complaint, and notification of whether or not a written report from the distributor is requested.

FURTHER INFORMATION

Recommended directions for use of this system (surgical operative techniques) are available at no charge upon request. If further information is needed or required, contact Medtronic.

DESCRIPTION OF DEVICE MARKINGS

	Batch code
	Catalogue number
	CAUTION: Federal law (U.S.A.) restricts this device to sale by or on the order of a physician.
	Consult instructions for use
	Do not re-use
	For U.S. audiences only.
	Manufacturer
	MR conditional
	Non-sterile
	Sterilized using irradiation
	Use-by date