stryker® BIOTECH

OP-1 IMPLANT PACKAGE INSERT

HUMANITARIAN DEVICE. OP-1 Implant is authorized by Federal law for use as an alternative to autograft in recalcitrant long bone nonunions where use of autograft is unfeasible and alternative treatments have failed. The effectiveness of this device for this use has not been demonstrated.

Caution: Federal law restricts this device to sale by or on the order of a physician.

PRODUCT DESCRIPTION:
OP-1 Implant is an osteoinductive and osteoconductive bone graft material. It is supplied in a glass vial containing one gram of the device in the form of a sterile dry powder comprised of recombinant human Osteogenic Protein 1 (OP-1 or BMP-7) and bovine bone collagen.

Self-adhesive patient labels indicating the lot number of the implant are provided for the user's convenience.

STORAGE CONDITIONS:
Store OP-1 Implant at 2-8 °C.

INDICATIONS:
OP-1 Implant is indicated for use as an alternative to autograft in recalcitrant long bone nonunions where use of autograft is unfeasible and alternative treatments have failed.

CONTRAINDICATIONS:
- OP-1 Implant should not be used to treat patients who have a known hypersensitivity to the active substance or to collagen.
- OP-1 Implant should not be applied at the site of a resected tumor which is at or near the vicinity of the defect/fracture or in patients with a history of malignancy.
- OP-1 Implant should not be administered to patients who are skeletally immature (<18 years of age or no radiographic evidence of closure of epiphyses).
- OP-1 Implant should not be administered to pregnant women. The potential effects of OP-1 treatment on the human fetus have not been evaluated. Studies in rats injected with high doses of OP-1 have shown that small amounts of OP-1 will cross the placental barrier.

WARNINGS:
- Women of childbearing potential should be advised that antibody formation to OP-1 and its influence on fetal development have not been assessed. 38% of patients treated with OP-1 Implant and 13% of patients treated with autograft develop antibodies. The effect of maternal antibodies to OP-1 on the unborn fetus is unknown, both when the antibodies are detected during the first year following treatment and later, when the antibodies may not be detectable. Studies in genetically altered mice indicate that OP-1 is critical for fetal development and that lack of OP-1 activity, as might be induced by antibody, may cause neonatal death or birth defects.
- Women of childbearing potential should be advised to use contraception for one year following treatment with OP-1 Implant.
- The maximum human dose should not exceed 2 vials. In clinical studies treating nonunions requiring more than 2 vials, there was a higher incidence of failure.
- OP-1 Implant has no biomechanical strength to support fixation without a shared loading/stabilization adjunct (i.e., cast, instrumentation, etc.) in long bones. The following fixation methods have been utilized in clinical trials studying OP-1 Implant: cast/brace, external fixation, intramedullary rod and internal plate.
- Localized ectopic or heterotopic bone formation may occur outside of the treatment site.

PRECAUTIONS:
- Clinical studies using OP-1 Implant were performed in patients with nonunions resulting from trauma. There are no data regarding the use of OP-1 Implant in patients with nonunions resulting from bone diseases.
- OP-1 Implant may cause an immune reaction in some patients. The safety or probable benefit of OP-1 Implant in patients with autoimmune disease has not been demonstrated.
- The effect of radiation therapy, chemotherapy, immunosuppressive or steroid therapy on the probable benefit of OP-1 Implant is not known.
- There are no data on the excretion of OP-1 in the breast milk of patients who are nursing.
- OP-1 is important in the development of the kidney. Studies have not been performed to examine the neutralizing capacity of antibodies to OP-1 or their effect in patients with impaired renal function.
- IMMUNOGENICITY: As with all therapeutic proteins, there is a potential for immune responses to be generated against components of the OP-1 Implant. In the Tibial Nonunion clinical study, antibodies were detected to OP-1 (BMP-7) by an ELISA assay in 23/61 (38%) OP-1 treated patients and 8/61 (13%) autograft treated patients and confirmed by Western Blot analysis. The neutralizing capacity of these antibodies was not assessed. The significance of these antibodies is not known. The incidence of antibody detection is highly dependent on the sensitivity and specificity of the assay. The sensitivity of the antibody assay has not been adequately assessed and the actual incidence of antibodies could be higher. Additionally, the incidence of antibody detection may be influenced by several factors including sample handling, concomitant medications, and underlying disease. For these reasons, comparison of the incidence of antibodies to OP-1 Implant with the incidence of antibodies to other products may be misleading.
- A two year rat bioassay, in which approximately 17.5-70 times the equivalent maximum human dose of 2 vials of OP-1 Implant was placed under the skin, produced more cancer growths at the site of implantation of the OP-1 Implant compared to rats that had no OP-1 Implant. It is believed that this may be due to the Oppenheimer Solid State Tumor Effect, the formation of tumors at the site of implantation of inert objects under the skin in rats. This effect has not been reported in humans. Additional studies are ongoing to examine the effect of OP-1 on the growth of pre-existing tumors.
- Take care to ensure that OP-1 Implant will be contained by viable hard and soft tissue structures. Obtain adequate hemostasis before implanting OP-1 Implant to prevent the product from being displaced.
- Inadequate vascularity in the surrounding tissues may diminish the probable benefit of OP-1 Implant. Make every effort to surround the product with viable tissue.
- For single use only. Do not re-use OP-1 Implant. Discard unused product and use a new device for subsequent applications.
- Prior to use, inspect the packaging, vial and stopper for visible damage. If damage is visible, don't use the product. Retain the packaging and vial, and contact a Stryker Biotech representative.
- Do not use after the printed expiration date on the label.

ADVERSE EVENTS:
The following table is from two multicenter studies of OP-1 Implant in patients with long bone nonunions. Reported in the table are adverse events relevant to an orthopaedic procedure occurring in >1% of the total treated patients. Other less frequent and related events are listed in Table 1 below. No serious adverse events were attributed to the use of OP-1 Implant.

Table 1 - Summary of Adverse Events for All Patients in the Two Long Bone Nonunion Studies

Adverse Event Description	Tibial Nonunion Study OP-1 Implant n=61	Tibial Nonunion Study Autograft n=61	Long Bone Nonunion Study OP-1 Implant n=29
Musculoskeletal			
Hardware Complication	28/61	40/61	6/29
Nonunion	7/61	4/61	5/29
Osteomyelitis	6/61	15/61	7/29
Injury as a Result of Fall	3/61	3/61	2/29
Malunion	3/61	0/61	1/29
Hardware removal	2/61	1/61	0/29
Tendonitis (patellar, Achilles)	2/61	1/61	0/29
Contracture	1/61	3/61	1/29
Fracture (other)	1/61	3/61	0/29
Fracture (tibia, fibula)	1/61	3/61	1/29
Skin and Wound			
Wound Infection	18/61	14/61	5/29
Local Inflammation, rash, redness, itching	12/61	10/61	0/29
Swelling (ankle, foot, leg)	7/61	8/61	2/29
Blisters, skin abrasions	5/61	0/61	0/29
Neural			
Pain (ankle, knee, leg)	27/61	22/61	12/29
Neuralgia (numbness)	5/61	6/61	3/29
Pain (other)	3/61	3/61	3/29
Nerve injury	2/61	2/61	0/29
Cardiovascular			
Hematoma	4/61	8/61	3/29
Anemia	4/61	5/61	1/29
Gastro-Intestinal			
Nausea, vomiting	18/61	19/61	3/29
Gastro-intestinal upset (indigestion, constipation, diarrhea)	7/61	5/61	1/29
Systemic and Other Complications			
Fever	31/61	29/61	0/29
Normal Surgical Complications	10/61	8/61	0/29
Drug Allergy (morphine, antibiotics)	2/61	5/61	1/29

Other events include: amputation of toe, aortocoronary bypass with valve replacement, arthritis, arthroscopy, arthrosis, athlete's foot, bruising, burning sensation, cardiac complications following surgery, chondrectomy, chondromalacia, cold symptoms/upper respiratory infection, death-unrelated causes, depression, dizziness, ear infection, fatigue, gangrene, headache/migraine, incontinence, insomnia, meniscal tear, muscle spasm, muscular herniation, myositis ossificans, nosebleeds, pancreatitis, peptic ulcer, plantar fascial fibromatosis, post operative bleeding, sciatica, skin graft, short term memory loss, shortness of breath, slow or decreased urination, stiffness, sweating, thrombophlebitis, thrombosis, urinary tract infection, weight loss, wound dehiscence, yeast infection.

Five (8%) OP-1 Implant patients reported 6 treatment related medical events, including persistent nonunion (3), erythema/swelling (2) and drainage (1).

Adverse event data has been collected from over 500 domestic and international patients treated with OP-1. Table 2 describes the incidence of cancer reported in these patients.

Table 2 – Incidence of Cancer in Patients Treated with OP-1 Worldwide

Cancer Type	Age	Sex	Time of Event Post-treatment with OP-1	Outcome
Pancreatic tumor with multiple metastases	83yrs.	Male	3 Months	Death
Gastric carcinoma	79yrs.	Male	9 Months	Recovered
Mantle cell lymphoma	76yrs.	Female	29 Months	Death
Right occipital basal cell carcinoma (non-healing forehead lesion)	60yrs.	Male	11 Months	Recovered
Recurrence of Chondrosarcoma	43yrs.	Female	6 weeks*	Death

* Treating physician believes recurrence may have presented on thalium scan prior to treatment with OP-1.

Five patients reported the occurrence of cancer. Four of the 5 events reported were non-osseous cancers occurring in elderly patients. A fifth event of recurring chondrosarcoma was reported in a patient with a history of chondrosarcoma. Recurrence and disease progression were considered normal for this type of cancer. The incidence of cancer in patients treated with OP-1 is less than 1% and is within the range of cancer occurrence in the general populations of the U.S. and Australia (the countries in which most patients were treated).

Eight (1.6%) out of more than 500 patients treated with OP-1 experienced 10 events related to urinary or renal systems. All 10 events were considered by the treating physicians as unrelated to study treatment and were mild to moderate in severity. No severe adverse events of this nature were reported. Events included urinary tract infection (5), slow urination (1), decreased urine output (1), urinary retention (1) and retrograde ejaculation (2). Many of these events were reported immediately post-treatment and can be attributed to catheterization during and after surgery.

PREPARATION FOR USE:
OP-1 Implant is intended to be reconstituted with sterile Sodium Chloride (NaCl) Injection, 0.9%, USP solution (saline).

1. Using sterile technique, remove the vial from its packaging.
2. Lift the plastic flip-top and remove the crimp from the vial.

Warning: Handle the crimp with care. The edges of the crimp are sharp and may cut or damage gloves.

3. Aligning your thumb with the internal gap of the stopper, pry up the edge of the stopper. Once the vacuum is broken, remove the vial stopper while holding the vial upright to prevent loss of product.

Warning: Do not insert a needle through the stopper. Puncture of the stopper with a needle may result in particles of stopper material contaminating the OP-1 Implant.

4. Utilizing a sterile syringe, carefully add 2-3 cc of sterile saline to OP-1 Implant in the vial. Begin with 2 cc and add saline to desired consistency. Use of more than 3 cc will result in a less cohesive product which will be difficult to handle.
5. Mix the saline with the product in the vial using a sterile spatula or curette.
6. The product will expand to a maximum volume (~4cc) within 2 minutes. Use the product promptly after reconstituting with saline.

RECOMMENDED TECHNIQUE:
1. Debride fibrous, necrotic or sclerotic tissue and, when appropriate, decorticate bone so that OP-1 Implant will directly contact viable osseous tissue.
2. Provide adequate hemostasis to ensure that the material stays at the surgical site. Irrigate the surgical site as necessary, prior to placement of OP-1 Implant. Where practical, surgical manipulations to the site should be completed prior to device implantation.
3. Remove the reconstituted OP-1 Implant from the vial with a sterile instrument such as a spatula or curette.
4. Apply OP-1 Implant to the prepared osseous tissue site. The amount of material used should approximate the size of the bone defect.

   Warning: Do not use suction or irrigation directly at the implant site as this may remove particles of OP-1 Implant. Remove excess fluid by suctioning adjacent to the implant site or carefully blotting the area with a sterile sponge.
5. Close soft tissues around the defect containing OP-1 Implant using suture material of choice. Closure is critical for containment and maintenance of OP-1 Implant particles in the area of the defect.
6. After closure of the soft tissue around the defect, irrigate field, if necessary, to remove any stray particles.

Do not place a drain directly in the implant site. Place it subcutaneously if possible.

CLINICAL EXPERIENCE:
Clinical experience with OP-1 Implant in the intended indication is summarized below. In a multicenter Tibial Nonunion Study, a subset of 14 patients with prior failed autograft were treated with OP-1 Implant. In a second multicenter Long Bone Treatment Study, 10 patients with long bone nonunions having prior failed autograft were treated with OP-1 Implant. Results are shown in Tables 3 and 4 below:

Table 3 - Tibial Nonunion Study Results– Prior autograft patients only

Analysis at 9 Months	OP-1 Implant N=14	Autograft N=13
Overall	7/14	11/13
Clinical (Pain and Function)	12/14	12/13
Radiographic (Bridging in 3 views)	8/14	12/13

Table 4 - Long Bone Treatment Study Results

Analysis at 9 Months	OP-1 Implant N=10
Overall	1/10
Clinical (Pain and Function)	7/10
Radiographic (Bridging in 3/4 cortices)	2/10

Manufactured by

stryker BIOTECH

Registration # 9045977
35 South Street
Hopkinton, MA 01748 USA
Phone (508) 416-5200
www.op1.com

A division of
Stryker Corporation
2725 Fairfield Road
Kalamazoo, MI 49003

stryker®
BIOTECH

OP-1™ IMPLANT

FACTS YOU SHOULD KNOW ABOUT THE USE OF OP-1 IMPLANT IN TREATING LONG BONE NONUNIONS WHERE TREATMENT WITH PRIOR AUTOGRAFT HAS FAILED OR WHERE USE OF AUTOGRAFT IS NOT FEASIBLE

HUMANITARIAN DEVICE. OP-1 Implant is authorized by Federal law for use as an alternative to autograft in recalcitrant long bone nonunions where use of autograft is unfeasible and alternative treatments have failed. The effectiveness of this device for this use has not been demonstrated.

PATIENT INFORMATION BOOKLET

Read all of this leaflet carefully before you are treated with OP-1 Implant.
- Keep this leaflet. You may need to read it again.
- If you have further questions, please ask your doctor before your surgery.

Stryker Biotech
35 South Street
Hopkinton, MA 01748
(508) 416-5200

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INTRODUCTION

This booklet contains information to help you decide whether or not to have surgery with OP-1 Implant to treat your nonunion. A procedure that requires your surgeon to take bone from elsewhere in your body (often part of your hip) to use as a graft, called autograft, can also be used for treatment of nonunion. OP-1 Implant is a replacement for autograft, and does not require your surgeon to take bone from another part of your body.

Please read this booklet completely and discuss your questions with your doctor. Only your doctor can determine whether OP-1 Implant is appropriate for you.

FREQUENTLY ASKED QUESTIONS REGARDING THE USE OF OP-1 IMPLANT

WHAT IS OP-1 IMPLANT AND WHAT IS IT USED FOR?

Osteogenic protein 1 (OP-1) is a protein normally found in the body which has a role in normal bone modeling, repair and other developmental processes. OP-1 Implant is a manufactured form of this human protein. It is supplied as a powder comprised of recombinant human Osteogenic Protein 1 and bovine bone collagen that is mixed with sterile saline solution (salt water) to form a paste which is then placed between the broken ends of the bone during surgery. It is believed that it may help heal your fracture.

WHEN SHOULD OP-1 IMPLANT NOT BE USED?

You should not use OP-1 Implant if:

- you are allergic to OP-1 or collagen.
- there has been a tumor removed at or near the vicinity of the injury/fracture.
- you have had a previous history of cancers.
- you are <18 years of age or you are still growing.
- you are pregnant.

WHAT IS A NONUNION?

When a fracture does not heal after a certain period of time, it may be considered to be a nonunion. Healing of a fracture may be slowed down by mechanical issues, such as movement at the fracture site, or biological issues such as the effects of smoking, or lack of bone-forming cells at the fracture site.

WHAT SHOULD I KNOW ABOUT OP-1 IMPLANT BEFORE DECIDING TO USE IT?

There are certain things you should know before being treated with OP-1 Implant. Please read the following carefully. If you have any questions about the use of OP-1 Implant, please ask your doctor before your surgery.

What are the Risks and Benefits of OP-1 Implant?

These are the risks associated with the use of OP-1 Implant:

- Failure to heal your nonunion fracture.
- Allergic reaction to the product or any of its parts.
- Bone growth in other areas outside the area of injury if the product is misplaced.
- Other unknown risks and discomforts which are individual to each patient. (See Warnings and Precautions)

The possible benefits associated with the use of OP-1 Implant include:

- Healing of your nonunion.

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Are there any WARNINGS/PRECAUTIONS I should know about the use of OP-1 Implant?

WARNING: If you are a woman who is able to have children, you should know that you may develop antibodies (an immune reaction) to OP-1. In clinical studies 38% of all patients treated with OP-1 Implant and 13% of patients treated with autograft instead of OP-1 Implant developed antibodies. The effect of a mother's antibodies on the OP-1 made naturally by an unborn baby is not known, both when the antibodies are detected during the first year following treatment with OP-1 and later, when the antibodies may not be detectable by laboratory testing. Studies in mice have shown that OP-1 is necessary for proper development of an unborn baby and that lack of OP-1 may cause life-threatening birth defects.

If you are a woman who is able to have children, you should use contraception for one year after treatment with OP-1 Implant.

- The maximum human dose should not exceed 2 vials. In clinical studies treating nonunions requiring more than 2 vials, fewer fractures healed.
- OP-1 Implant will not support any weight or prevent movement of the fracture on its own. Devices such as a metal plate, rod or cast may be used to prevent movement of the broken bone. These devices have been studied in clinical trials with OP-1 Implant. Your doctor will choose the appropriate method.
- Bone may form in the muscle or other tissues near the fracture.

PRECAUTIONS:

- Clinical studies using OP-1 Implant were performed in patients with nonunions resulting from trauma. There are no data regarding the use of OP-1 Implant in patients with nonunions resulting from bone diseases.
- OP-1 Implant may cause an immune reaction in some patients. The safety or probable benefit of OP-1 Implant in patients with autoimmune disease has not been demonstrated.
- The effect of radiation therapy, chemotherapy, immunosuppressive or steroid therapy on the probable benefit of OP-1 Implant is not known.
- There are no data on the excretion of OP-1 in the breast milk of patients who are nursing. OP-1 is important in the development of the kidney. Studies have not been performed to examine the neutralizing capacity of antibodies to OP-1 or their effect in patients with impaired renal function.
- IMMUNOGENICITY: Your body may generate an immune response, or antibodies, against OP-1 Implant. In a clinical study, antibodies against OP-1 were detected by a laboratory test in 23/61 (38%) patients treated with OP-1 and 8/61 (13%) patients treated with autograft instead of OP-1. The ability of these antibodies to block the effects of OP-1 made naturally by your body or by a developing fetus has not been assessed. The ability of the laboratory tests to detect antibody to OP-1 may not be adequate, and the actual percentage of patients who generate antibodies to OP-1 could be higher or lower.
- A two year study in rats, in which approximately 17.5-70 times the equivalent maximum human dose of 2 vials of OP-1 Implant was placed under the skin, produced more cancer growths at the site of implantation of the OP-1 Implant compared to rats that had no OP-1 Implant. It is believed that this may be due to the Oppenheimer Solid State Tumor Effect. This effect refers to the formation of tumors at the site of implantation of inert objects under the skin in rats, and has not been reported in humans. Additional studies are ongoing to examine the effect of OP-1 on the growth of pre-existing tumors.

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Adverse event data have been collected from over 500 domestic and international patients treated with OP-1. In total, five patients (<1%) reported the occurrence of cancer. Four of the 5 events reported were non-osseous cancers of varying type and location occurring in elderly patients. A fifth event of recurring chondrosarcoma was reported in a patient with a history of chondrosarcoma. The incidence of cancer in patients treated with OP-1 is less than 1% and is within the range of cancer occurrence in the general populations of the U.S. and Australia (the countries in which most patients were treated).

- During the surgery your surgeon will take care to ensure that OP-1 Implant will be contained within the bone fracture. Your surgeon will make sure there is minimal bleeding at the fracture so that the OP-1 Implant is not washed away.
- Damaged blood vessels or decreased blood flow in the nearby tissues may decrease the probable benefit of OP-1 Implant. Your surgeon will make every effort to surround the product with healthy tissue.

Has OP-1 Implant been studied in humans?

Two clinical studies (Tibial Nonunion Study and Long Bone Treatment Study) were performed under Investigational Device Exemptions which included patients with long bone nonunions. Data from the subset of patients in each study who had a history of failed prior autograft, who met the protocol criteria, and who had data at 9 months post-treatment with OP-1 Implant, are presented in Tables 1 and 2 below.

Table 1 – Patients Meeting Success Criteria at 9 Months Follow-up in Tibial Nonunion Study

	OP-1 Implant N=14	Autograft N=13
Overall	7/14	11/13
Clinical (Pain and Function)	12/14	12/13
X-ray (Bridging in 3 views)	8/14	12/13

Table 2 – Patients Meeting Success Criteria at 9 Months Followup in Long Bone Nonunion Treatment Study

	OP-1 Implant N=10
Overall	1/10
Clinical (Pain and Function)	7/10
X-ray (Bridging in 3/4 cortices)	2/10

What are the most common side effects of surgery with OP-1 Implant?

There are many common side effects to any type of surgery whether OP-1 Implant or Autograft is utilized. You should tell your doctor immediately if you do not feel well after your surgery.

Many patients experience the following side effects:

- Fever
- Complications involving hardware
- Pain
- Nausea and vomiting
- Wound infection

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- Local inflammation, rash, redness, itching of the skin and wound

This is not a complete list of all possible side effects. Tell your doctor or nurse if you notice anything that is making you feel unwell, even if it is not on this list.

Ask your doctor if you do not understand anything in this list. Do not be alarmed by this list of possible side effects. You may not experience any of them.

What other side effects were observed with OP-1 Implant in human studies?

Adverse events that were clearly relevant to an orthopaedic procedure for the treatment of nonunion or whose incidence was of significant interest to an orthopaedic surgeon are reported in Table 1. Adverse events listed below the table typically occurred in only a few patients.

Table 3: Summary of Adverse Events for All Treated Patients in the Tibial Nonunion and Long Bone Nonunion Studies

Adverse Event Description	Tibial Nonunion Study		Long Bone Nonunion Study
	OP-1 Implant n=61	Autograft n=61	OP-1 Implant n=29
Musculoskeletal			
Hardware Complication	28/61	40/61	6/29
Nonunion	7/61	4/61	5/29
Osteomyelitis	6/61	15/61	7/29
Malunion	3/61	0/61	1/29
Injury Resulting from Fall	3/61	3/61	2/29
Hardware removal	2/61	1/61	0/29
Tendonitis (patellar, Achilles)	2/61	1/61	0/29
Contracture	1/61	3/61	1/29
Fracture (other)	1/61	3/61	0/29
Fracture (tibia, fibula)	1/61	3/61	1/29
Skin and Wound			
Wound Infection	18/61	14/61	5/29
Local Inflammation, rash, redness, itching	12/61	10/61	0/29
Swelling (ankle, foot, leg)	7/61	8/61	2/29
Blisters, skin abrasions	5/61	0/61	0/29
Neural			
Pain (ankle, knee, leg)	27/61	22/61	12/29
Neuralgia (numbness)	5/61	6/61	3/29
Pain (other)	3/61	3/61	3/29
Nerve Injury	2/61	2/61	0/29
Cardiovascular			
Hematoma	4/61	8/61	3/29
Anemia	4/61	5/61	1/29
Gastro-Intestinal			
Nausea, vomiting	18/61	19/61	3/29
Gastro-intestinal upset (indigestion, constipation, diarrhea)	7/61	5/61	1/29
Systemic and Other Complications			
Fever	31/61	29/61	0/29
Normal Surgical Complications	10/61	8/61	0/29
Drug Allergy (morphine, antibiotics)	2/61	5/61	1/29

Other events include: amputation of toe, aortocoronary bypass with valve replacement, arthritis, arthroscopy, arthrosis, athlete's foot, bruising, burning sensation, cardiac complications following surgery, chondrectomy, chondromalacia, cold symptoms/upper respiratory infection, death-unrelated causes, depression, dizziness, ear infection, fatigue, gangrene, headache/migraine, incontinence, insomnia, meniscal tear, muscle spasm, muscular herniation, myositis ossificans, nosebleeds, pancreatitis, peptic ulcer, plantar fascial fibromatosis, post operative bleeding, sciatica, skin graft, short term memory loss, shortness of breath, slow or decreased urination, stiffness, sweating, thrombophlebitis, thrombosis, urinary tract infection, weight loss, wound dehiscence, yeast infection.

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Ask your doctor if you do not understand anything in this table. Do not be alarmed by this table of possible side effects. You may not experience any of them.

What are my other options for treatment?
The following are possible alternative procedures or treatments to treat your injury. Your doctor will tell you which are the best options for you.

- Autograft – This is when bone is taken from one part of your body and placed at the site of injury. If your doctor has recommended OP-1 Implant, then you probably have already been treated with autograft or are not a candidate for autograft. For those patients who have already been treated with autograft, obtaining bone from the same donor site or a new donor site may lead to increased risks, including but not limited to new or increased pain, fracture of the donor site bone because of larger bone loss, injury to the nerves or blood vessels in the donor site area because of scar tissue from the previous surgery, and complications from previous infection. Discuss this option with your doctor before being treated with OP-1 Implant.

- No treatment – Some nonunions may be left untreated, however, this can lead to pain, limited movement, deformity, and paralysis. OP-1 Implant could potentially heal these nonunions, eliminating the pain and deformity of living with a nonunion.

- Bone Growth Stimulators - Devices that apply electrical energy to fracture sites to promote healing.

- Amputation – This is removal of a part of the body with surgery. OP-1 Implant has the potential to save the limb of patients for whom amputation is the only alternative, eliminating the associated physical and psychological disability.

HOW IS OP-1 IMPLANT USED?
Only a well-trained and experienced surgeon will treat you with OP-1 Implant.

WHEN IS IT USED?
OP-1 Implant will be implanted during your surgery. OP-1 Implant is mixed with sterile saline solution (salt water) and then placed between the broken ends of the bone. The nearby muscle and skin are then closed around the OP-1 Implant to help keep it in place.

Movement of the broken bone may prevent the bone from healing. OP-1 Implant on its own will not support any weight or prevent movement. Devices such as a metal plate, or cast may be used to prevent movement between the ends of the bone. Your doctor will choose the appropriate method to ensure this.

HOW MUCH IS USED?
Your doctor will decide how much OP-1 Implant will be needed; this will depend on the severity of the broken bone. Usually between one and two units are required. No more than 2 units should be used.

WHAT DO I NEED TO KNOW BEFORE MY SURGERY WITH OP-1 IMPLANT?

How is the surgery performed?
If you have any questions on how OP-1 Implant will be used to treat your injury, please ask your doctor before your surgery.

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1. You will be asleep during this procedure.

2. Your doctor will prepare the surgical site for the application of OP-1 Implant. This will include exposing the bone fracture and cleaning away any unhealthy tissue in the area of the injury to ensure that only healthy tissue is in contact with OP-1 Implant.

3. OP-1 Implant is then mixed with sterile saline solution (salt water) to make a paste.

4. Your doctor will apply OP-1 Implant to the bone. The amount of OP-1 Implant used depends on the size of the bone fracture.

5. Your doctor will close the muscle and skin surrounding the injury site (with stitches) to contain the OP-1 Implant.

What should I expect before and after surgery?

Before your surgery
There are no specific instructions to follow before your treatment with OP-1 Implant. However, your doctor may advise you to stop smoking, or to stop taking certain drugs (e.g., blood thinners) before your surgery. Your doctor may also prescribe certain drugs (e.g., antibiotics) for you to take before your surgery.

After your surgery
Your doctor may apply a cast or brace during your surgery to limit movement of the treated bone.

Your doctor will speak to you about the proper care and rehabilitation required after your surgery. This may include limited weight-bearing or use of the treated bone, physical therapy, the use of antibiotics (drugs to help fight infection), or anti-inflammatory drugs (to help fight swelling and pain). Always follow the instructions of your doctor to ensure the best recovery after any surgery.

IF YOU STILL HAVE QUESTIONS REGARDING THE USE OF OP-1 IMPLANT, PLEASE CONSULT YOUR DOCTOR BEFORE YOUR SURGERY

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