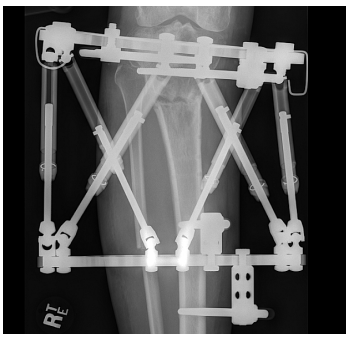
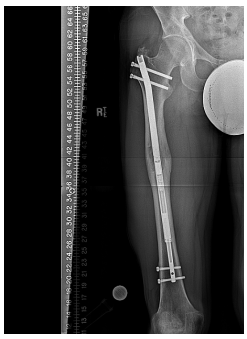
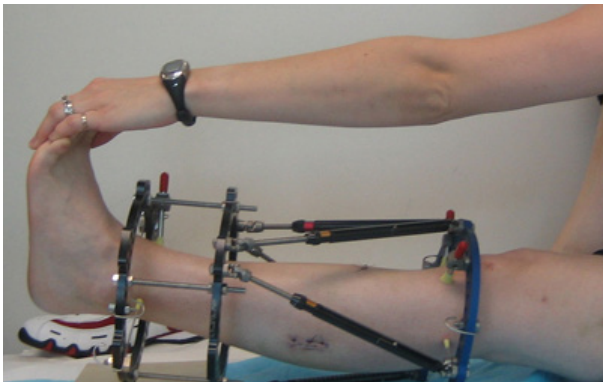
HSS

RECOVERY GUIDE

Limb Lengthening and Complex Reconstruction Surgery







S. Robert Rozbruch, MD, Service Chief
Austin T. Fragomen, MD, Fellowship Director
Taylor J. Reif, MD, Orthopedic Surgery

New York Limb Lengthening and Complex Reconstruction Surgery (NYLLCRS)

HSS | Hospital for Special Surgery

New York Limb Lengthening and Complex Reconstruction Surgery (NYLLCRS)

www.LimbLengthening.com
www.hss.edu/limblengthening

Welcome to the family of the ***New York Limb Lengthening and Complex Reconstruction Surgery (NYLLCRS)*** at Hospital for Special Surgery (HSS). Our goal is to provide you, your family and friends with the knowledge and support needed to ease the surgery and recovery process. Our team is a group of dedicated professionals, specializing in your type of condition. We will guide you through your journey toward a better, more mobile, balanced, and fulfilled life.

www.hss.edu/LSARC
www.facebook.com/LimbLengtheningNYC
http://www.instagram.com/limblengthening
www.twitter.com/limblengthen
https://www.youtube.com/channel/UC-JL_X6ALjZXiXtcPkU9Ctg

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OUR TEAM

Dr. S. Robert Rozbruch, Chief

After graduating Magna Cum Laude from the University of Pennsylvania, Dr. Rozbruch attended Weill Cornell Medical College of Cornell University, from which he graduated with honors in research. Residency training in orthopedic surgery was followed by two fellowships. He did specialized training in Trauma as an AO fellow at the University of Bern in Switzerland. Additional training in adult and pediatric limb lengthening followed at the Maryland Center for Limb Lengthening & Reconstruction. Dr. Rozbruch is the Chief of the ***New York Limb Lengthening and Complex Reconstruction Surgery (NYLLCRS)*** at Hospital for Special Surgery. He is a Professor of Clinical Orthopaedic Surgery at Weill Cornell Medical College. He is a member of several national medical societies including fellowship in the American Academy of Orthopaedic Surgeons, Orthopaedic Trauma Association, and ASAMI — The Limb Lengthening & Reconstruction Society of which he was President (2012-2013). He has presented his clinical and research works at national medical meetings and has authored numerous articles in medical journals and chapters in orthopedic textbooks.

Dr. Austin T. Fragomen, Fellowship Director

Dr. Fragomen attended medical school at the State University of New York Downstate College of Medicine. He excelled through a very hands-on surgical internship at Montefiore and Jacobi medical centers in the Bronx. He launched into his orthopedic residency training program, under John R. Denton, MD, at the Saint Vincent Catholic Medical Center. As chief resident, he took a strong interest in fracture care, limb reconstruction, and joint preservation surgery. He then relocated to San Francisco, California to dedicate himself to learning advanced techniques in surgery of the shoulder and knee with pioneer and innovator Eugene M. Wolf, MD. He returned to New York's Hospital for Special Surgery to become its first fellow in ***New York Limb Lengthening and Complex Reconstruction Surgery (NYLLCRS).*** He has presented his clinical and biomechanical research at medical meetings and has authored and edited articles for various orthopedic journals and textbooks. He has lectured extensively on related topics to residency training programs and in the community setting.

Skilled in the art of less invasive surgery, Dr. Fragomen will perform a sophisticated and comprehensive analysis of each patient to determine an optimal treatment plan. Whether performing an all-arthroscopic rotator cuff repair or mounting a percutaneous external fixation frame, the goal is always to minimize the trauma of surgery and maximize a rapid and functional recovery.

Taylor J. Reif, MD, Orthopedic Surgery, Orthopedic Oncology, Limb Lengthening

Dr. Taylor Reif is a member of the Limb Lengthening and Complex Reconstruction Service at Hospital for Special Surgery. He specializes in the comprehensive surgical care of musculoskeletal tumors as well as the reconstruction of limbs affected by primary bone tumors, metastatic disease, trauma, infection, and deformity. He has particular clinical and research interest in joint preservation and live bone reconstruction of tumor related deformity and bone loss.

Dustin Quig, PA-C Dustin is the **Physician Assistant** to Drs. Rozbruch and Fragomen. He attended Penn State University where he graduated with honors, earning a degree in kinesiology. Following graduation, Dustin attended the Cornell University Physician Assistant program. While at Cornell, Dustin had a strong desire to pursue orthopedics, completing an elective rotation at the Hospital for Special Surgery and writing his senior thesis on hip replacement surgery. After graduation Dustin joined the HSS ***New York Limb Lengthening and Complex Reconstruction Surgery (NYLLCRS)***. In his spare time, he enjoys playing guitar, participating in both baseball and football, and exploring New York City.

Zachary Edelman, PA-C, Zachary is a **Physician Assistant** to Doctors S. Robert Rozbruch and Austin T. Fragomen at the ***Limb Lengthening and Complex Reconstruction Service (LLCRS)***. He attended Wagner College in Staten Island, NY where he graduated from a 5 year, accelerated BS/MS Physician Assistant program. While in PA school, Zachary was a patient at Hospital for Special Surgery where he got his first taste of orthopedic surgery. This experience gave him a strong desire to pursue a career in orthopedics. Zachary was later convinced that this field of practice was for him after completing several clinical rotations in the New York area, some of which were in orthopedic surgery. Amongst his course of studies, Zachary enjoyed the medical mission trips to Guatemala and Peru where he provided care to those in remote, underdeveloped village. Zachary joined the HSS Limb Lengthening team in July of 2018. In his spare time, he volunteers as an EMT at his town first aid squad in Freehold, NJ. He enjoys wood working, hiking and spending time with his family and friends.

Erica Lenihan, RN

Erica is the **Nurse Clinician** on the ***NYLLCRS,*** working with Drs. Rozbruch and Fragomen. She began working at the Hospital for Special Surgery (HSS) upon graduating from Dominican College with her Bachelor of Science Degree in Nursing. She transitioned to the ***NYLLCRS*** after working on the Adult and Pediatric in-patient floor at HSS for six years. Her interest and dedication to limb lengthening patients gives her the desire to improve and enhance their experiences whenever possible.

Nancy McGuire, LPN

Nancy is the **LPN** for the ***NYLLCRS***. She facilitates the day to day patient flow, and provides direct patient care in the office. She joined us with twelve years of previous experience in geriatric care, long-term care, sub-acute rehabilitation, and sports medicine. She is currently working on her Bachelor's degree in Nursing and has strong interests in nutrition and well-being. Her background, expertise, and motivation makes her an integral part of our team.

Omaira Dean

Omaira is the **Office Manager**, and Executive Assistant to Dr. Rozbruch.
Mrs. Dean attended NYCT in Brooklyn, NY. She began working at HSS in 1998 and joined Dr. Rozbruch in 2001. As the Institute manager, she is an essential member of our team.

Kathiria Torres

Kathy is the **Office Manager** in the ***NYLLCRS*** for Dr. Fragomen. She attended St. John's University with a business major. She joined Dr. Fragomen in 2007 and plays a significant role in his practice.

Rosa Mora

Rosa is the **Assistant Office Manager** for Dr. Rozbruch's team at the ***NYLLCRS.*** Rosa attended John Jay College of Criminal Justice with a Liberal Arts Major. She transferred to Hostos Community College to continue her education in liberal arts. She joined the service in July of 2008 and has remained devoted to providing excellent service ever since.

Hennessy Sosa

Hennessy is the **Medical Secretary** for Dr. Fragomen in the ***NYLLCRS.*** She previously worked for Dr. Rozbruch for almost three years. She attended Dutchess Community College in Poughkeepsie and majored in Human Services, graduating in May 2015. Hennessy majored in Human Services because she enjoys working with people and being able to help them and fulfill their needs to the best of their abilities. In her free time, Hennessy enjoys spending time with family, and friends. She also enjoys listening to music and shopping.

Jeffrey Tracy

Jeff has been with HSS since 2015 starting out as a patient registration specialist and moved to his current position as **Medical Secretary** to Taylor Reif, MD at NYLLCRS in 2020. Jeff has an extensive resume of close to 30 years of managerial and administrative expertise. He always strives to make the patient experience the best it can possibly be. Being a native New Yorker, his love of history for his home state is a passion of his! Jeff is also an avid lover of music, theatre, architecture and British Television.

Wilma Cortez

Wlima is the **Billing Manager** for the ***NY Limb Lengthening & Complex Reconstruction Surgery PLLC***. She has worked as a Billing Professional Since 2000. She has a Bachelors Degree in Business Administration Summa Cum Laude in Business Management. She works with the patients and insurance to get the best possible reimbursement. She takes pride in her job and the service she provides.

Jonathan Torres

Jonathan is the **File Clerk** for the ***NYLLCRS***. His role over the years has changed and adapted to the progressive technology of computerized medical records. He ensures that our patients' medical records are complete and up to date. Additionally, Jonathan completes all medical record requests for the service. He is an integral part of our team.

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my HSS

Your personal connection to world-class care.

MyHSS is a secure, online portal that makes it easy for you to prepare for your visit, stay connected to information about your care and communicate with your healthcare team anytime, anywhere from a smartphone, personal computer or tablet.

With the **MyHSS** online patient portal, you are able to:

PRE **Complete your Visit Pre-Check:**
Submit pre-visit questionnaires, select your preferred pharmacy and more

Manage your appointments:
Request an appointment or view details of your past and upcoming appointments

Request prescription refills

Access your test results

View your health summary:
Review medications, allergies and current health issues

Communicate with your healthcare team

You can also:

- View educational materials
- View statements and pay HSS bills (Hospital bills and bills for select providers)
- Request a copy of your medical record
- Complete clinical questionnaires on your health progress

MyHSS is not for medical emergencies.
If urgent care is required, please call 911.

To activate your secure, personal **MyHSS** account, follow these simple steps:

1. Go to: https://myhss.hss.edu/MyHSS/signup.
2. After entering your demographic information, you will be prompted to answer some questions to verify your identity.*
3. When prompted, create your **MyHSS** username. Many patients use their primary, personal email address for this since it is easy to remember.
4. When prompted, create your **MyHSS** password. You can change your password at any time.
5. You'll then be prompted to choose a password hint. This can be used if you forget your password.
6. When prompted, choose your communication preference. You'll be asked to enter a valid email address to receive notifications when new information is available. Once you are signed in to **MyHSS**, you can elect to receive notifications and messages from HSS through a mobile device.
7. Click 'Sign In.' You'll then be able to see portions of your medical record.

*We have partnered with Experian Precise ID® to provide electronic identity verification. If your identity cannot be verified electronically, you will need to confirm your identity in person at your next visit to receive an activation code.

If you need help navigating the portal or if you have any technical issues (i.e., login problems and password resets), call the **MyHSS** Help Desk at 844.269.4509.

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PLANNING FOR YOUR SURGERY

We use a multidisciplinary approach to your medical care. You will be referred to a Hospital for Special Surgery Medical Doctor for medical clearance 7 to 14 days prior to your surgery. Medical clearance is not permitted by an outside physician, unless you are undergoing ambulatory surgery. This doctor will order and perform any and all tests needed to ensure that your medical safety is maintained. This doctor will follow you throughout your hospitalization and organize, maintain and establish any and all medical treatments.

You may come to our office for a preop visit. At this time, you can meet with a member of our staff and discuss what to expect before, during, and after your surgery. With your consent, preoperative photographs may also be taken. The risks, benefits, and expectations of the surgical process will be reviewed at this time. postoperative care and expectations will also be reviewed. You will sign consent forms, and be given time to ask any questions. It is recommended that you bring a friend or family member to this visit. Although you will receive paperwork and documentation of everything discussed, there is a lot of information to remember. We also encourage you to come prepared with any questions.

You should plan on remaining in the hospital for 2 to 4 days after surgery, in most cases. Keep in mind the clothing adaptations that you will need to make. If you will have an external fixator, plan on wearing loose clothing that will fit over the frame (basketball pants with the side snaps work well). If you are undergoing arm or shoulder surgery, plan on wearing a button-up shirt.

Research Studies:

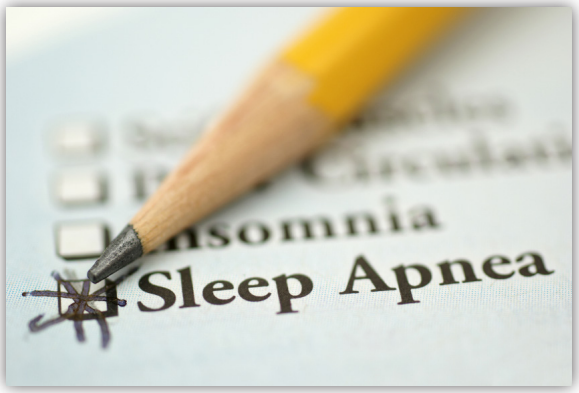
Medicine is always changing. We are constantly performing research studies for evidence-based practice. If you meet the criteria, you may be asked to participate in one of our studies. These studies are critical to development of our specialty. "Participation is not mandatory, and you can rest assured that being part of a study will never jeopardize your treatment or clinical outcome.

Sleep Apnea/CPAP/BIPAP:

Patients with sleep apnea generally require an overnight stay in the recovery room to be monitored and observed following surgery. If you use a sleep apnea device, bring your mask and a list of your machine settings. DO NOT bring the CPAP/BIPAP machine. You will be followed by a respiratory therapist throughout your hospitalization.

Smoking:

Smoking cessation is extremely important prior to any surgery, especially orthopedic surgery. Smoking decreases the body's ability to heal and impedes bone healing. Smoking increases your risk for infections, delayed healing, bone fractures, and amputations. We encourage you to contact your primary doctor for assistance with smoking cessation.



MEDICATIONS PRIOR TO SURGERY

Certain medications and supplements, including prescription medications, herbal supplements and over-the-counter (OTC) products can cause serious complications after surgery. Complications can include: bleeding, altered cardiac functions, increased sedation, decreased immunity, decreased or altered bone healing. It is imperative that you notify us if you take any of these medications. **We will inform you when and whether or not to discontinue them. The following lists are not all-inclusive, which is why it is very important to inform us of all of the medications and supplements that you take.**

HERBAL SUPPLEMENTS

The efficacy and safety of herbal products are not fully known. The Federal Drug Administration (FDA) does not regulate herbal products. The following herbals are known for their potentially harmful complications during and after surgery:

- Diet aids
- Echinacea
- Ephedra
- Feverfew
- Fish Oil
- Garlic
- Ginkgo
- Ginseng
- Kava
- Licorice
- Metabolife
- St. John's Wort
- Valerian
- Vitamin E
- Willow bark

OTC AND PRESCRIPTION MEDICATIONS

There are medications that can complicate surgery, and its healing process. No prescription medication should be stopped without the doctor's direction. Receiving and following directions on when and how to stop the medication is imperative.
Products containing acetylsalicylic acid (ASA, commonly called aspirin) thin the blood, which can cause excessive bleeding during surgery. The following are common products that contain aspirin:

Acetylsalicylic Acid Products:

- Alka-Seltzer
- Anacin
- Arthritis Pain Formula
- Ascriptin
- Aspergum
- Pepto Bismol

Aspirin Products:

- Aspirin Enteric Coated/Buffered
- Baby Aspirin[1]
- Bufferin
- Darvon Compound
- Ecotrin
- Empirin
- Equagesic
- Fiorinal
- 4-Way Cold
- Genprin
- Halfprin
- Midol Max
- Norgesic
- Percodan
- Sine-Off
- Soma
- Triaminicin Cold
- Vanquish
- Zorprin

Decrease 325mg doses of aspirin to 81mg (Baby Aspirin) daily – 7 days before surgery

[1]If you take baby aspirin (81mg) daily for your heart, you should continue this right up to the day of surgery.

MEDICATION'S PRIOR TO SURGERY (cont.)

Nonsteroidal anti-inflammatory (NSAID) products can increase bleeding, inhibit bone healing, and inhibit bone growth. The following products contain NSAIDs:

Advil
Aleve
Anaprox
Ansaid
Arthrotec
Bayer Select
Cambia
Cataflam
Clinoril
Daypro
Diclofenac
Diflunisal
Dolobid
Etodolac
Excedrin IB
Feldene
Fenoprofen
Flector Patch
Flurbiprofen
Haltran
Ibuprofen
Indocin
Indomethacin
Ketoprofen
Ketorolac
Lodine
Meclofenamate
Medipren
Mefenamic Acid
Meloxicam
Midol Cramp Formula
Midol IB
Mobic
Motrin
Nabumetone
Nalfon
Naprosyn
Naproxen Products
Nuprin
Orudis
Oxaprozin Products
Pamprin IB
Pennsaid
Ponstel
Piroxicam Products
Ponstel
Relafen
Rufen
Sulindac Products
Tolectin
Tolmetin Products
Toradol
Voltaren
Zipsor

All NSAID's are to be stopped 7 days before surgery.

Anticoagulants thin the blood and require close monitoring. These must be stopped prior to surgery. The following medications are used for anticoagulation therapy:

Aggrenox
Arixtra
Coumadin (Warfarin)[2]
Effient
Eliquis[3]
Fragmin
Lovenox[4]
Persantine (Dipyridamole)
Plavix (Clopidrogel)[2]
Pletal (Cilostazol)
Ticlid (Ticlopidine)
Xarelto[5]

[2]Coumadin and Plavix are both stopped 7 days before surgery.
[3]Eliquis needs to be stopped 3 days before surgery
[4]Lovenox needs to be stopped 24-36 hours before surgery; confirm with Medical MD on how soon to stop
[5]Xarelto needs to be stopped 3 days before surgery

The following are miscellaneous medications that may cause surgical complications. Do not stop taking these pills unless instructed to do so by your physician:

Furosemide
Guaifenesin
Hydrochlorothiazide
Imipramine
Lasix
Macrobid
Macrodantin
Nardil
Nitrofurantoin
Parnate
Phenelzine
Tranylcypromine
Tofranil

General:
Bisphosphonates
Growth Hormones
Rheumatoid Products
Smoking Cessation Products
Steroids
Weight Loss Medications

SURGERY

A nurse from the hospital will call you the day, evening, or night before your surgery. Last-minute instructions and time to report to the hospital will be provided. The nurse will be able to inform you which, if any, of your own medications should be brought into the hospital. In general, all medications must be dispensed by the hospital's pharmacy. A patient's own medications brought from home are generally not allowed to be administered (but specific exceptions can be made on occasion). If any controlled substances are brought into the hospital, they will be returned to a family member to be brought home. If your own medications are needed, be sure to bring them in their original bottles. Leave all narcotics at home.

Unless otherwise instructed, you are not permitted to eat or drink anything after midnight on the night before your surgery. Important medications should be taken the morning of surgery; i.e., blood pressure and heart medications, unless otherwise advised by the Doctor.

Please be certain to provide a list of all your medications, including any and all over-the-counter supplements to the operating room staff on the day of surgery. Please refer to the medication/supplement list on pages #8 and #9, and notify us if you take any of the listed medications.

When you arrive at the hospital, you must register. Once registered, you will go to the holding area. At this time, you will meet with nurses and physicians, including your surgeon and anesthesiologist. This is where you will be prepped for surgery. From the holding area, you will go into the operating room.

AFTER SURGERY

After your surgery is complete, you will be brought into the recovery room. The recovery room has different visiting hours from the rest of the hospital. You will be permitted visitors, but only during certain times. Depending the type of surgical procedure you have, you will either be transferred to the in-patient unit or discharged home. If you are discharged home following surgery, ***you must be accompanied by someone else.*** **The hospital will not allow you to leave alone.**

Preventing Blood Clots:

Following surgery, there is a risk that you may develop a blood clot, called a deep vein thrombosis (DVT). Development of a DVT is not likely, and we take full precautions to minimize the incidence of blood clots. To prevent DVTs following surgery, a small, massaging machine will be placed on your legs. This mechanical device enhances blood flow to the veins in your legs, which helps prevent blood clots. You will also be prescribed medication to minimize the risk of blood clots.

Case Management:

Every patient in the hospital has a case manager who assists with discharge planning and home services. If you are being admitted after surgery, you will meet your case manager up on the floor. It is at this time that you should advise her of your discharge needs (e.g., going home vs. rehabilitation center, transportation, home equipment, home nursing services).

External Fixator Care:

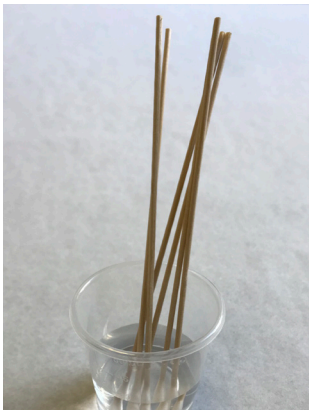
Reconstructive surgery usually requires stabilization of the bone. This is accomplished with either internal fixation (plates, rods, screws) or external fixation (a scaffold outside of the limb). All external fixators require daily care and maintenance. Pin care will need to be done on a daily basis, beginning two days after surgery, until the fixator is removed. While in the hospital, our nursing staff will educate and assist you with doing pin care. You are encouraged to have someone else who will be able to assist you at home learn how to do pin care as well. You may also refer to the ***Patient's Guide to Pin Care*** on the next page. If you are going to a rehab facility, the nursing staff may use this pamphlet as a reference for proper care. If you are being

discharged home, any family or friends assisting you may use it as their guide as well. A prescription for pin care supplies will be provided. Certain pharmacies perform medical supply orders, but most do not. In most cases, your insurance company can direct you to a medical supply company within your insurance network. It usually takes a couple of days to obtain your supplies. The discharging nurse will supply you with the necessary equipment needed for those couple of days at home.

You are permitted, and encouraged, to take a daily shower. This may begin four days after surgery, unless otherwise advised by us. It is best to clean the frame and extremity on a daily basis with a mild soap and freshly laundered washcloth. Keep the pin sites clean by using a washcloth around the pins, similar to the way in which you floss your teeth. Johnson's baby shampoo is also a good choice if you have sensitive skin. You **MAY NOT** take a bath, use a hot tub, or swim in a lake, ocean or pond while wearing an external fixator.

Obtaining Pin Care Supplies:

You will be provided with a prescription for pin care supplies at your pre-operative appointment. If home care has been arranged, your supplies are typically obtained through the home care agency assigned to your case. If not, you can have your local pharmacy or medical supply store order the supplies. If you are unable to obtain the supplies in this manner and have insurance coverage for wound care supplies, contact your insurance carrier for a list of medical supply companies that can be used. A small amount of supplies will be provided from the hospital upon discharge as well.

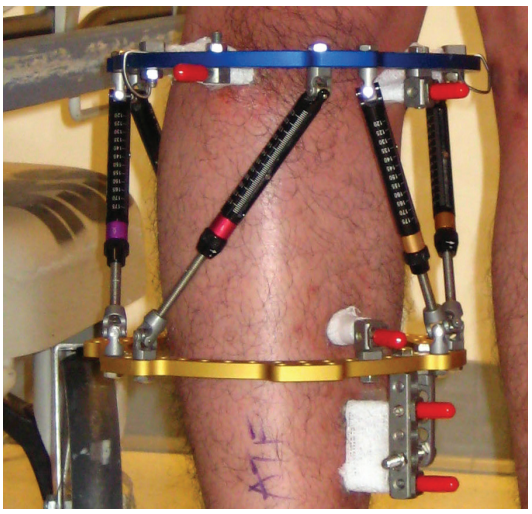


HSS

Limb Lengthening and Complex Reconstruction Surgery

Patient's Guide to **Pin Care**

Mono-Lateral Frame



Circular/Ilizarov Frame

S. Robert Rozbruch, MD ■ **Austin T. Fragomen, MD** ■ **Taylor J. Reif, MD**

Service Chief | Fellowship Director | Orthopedic Surgery

Why:

Pin care is important in the prevention of infection for circular and monolateral frames.

Supplies Needed:

- *Sterile Cotton Swabs*
- *Gauze Wrap*
- *Sterile Sodium Chloride / Sterile Normal Saline*

Frequently Asked Questions:

1. Can I take a shower?
In most cases, yes. In fact, a daily shower is recommended as part of the proper pin care procedure.

2. What kind of soap should I use?
A mild soap should be used to clean the frame and the surrounding area. Allow the water to run on the frame.

3. How often should pin care be done?
Once daily pin care should be done immediately following a shower.

4. Where do I get the supplies to do my pin pare?
The hospital will give you supplies for a couple of days to get you started and a prescription for supplies for the remainder of your pin care. (Insurance may or may not reimburse for supplies.)

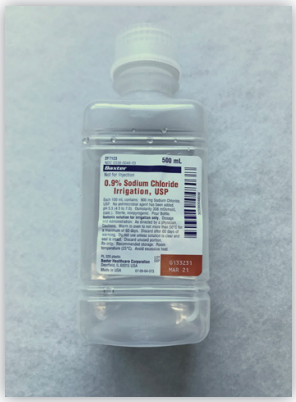
5. How long do I continue to do my pin care?
Pin care must be done until the first follow-up appointment. It is recommended that the pins continue to be wrapped thereafter; and pin cleaning (with cotton swabs) be done only if a pin infection is present.

6. How often should I change the pin care solution?
A new solution should be poured on a daily basis.

Steps for Pin Care:

(Variations and other interventions are to be made by the Doctor only).

1 Wash hands and apply gloves. Remove gauze dressing.



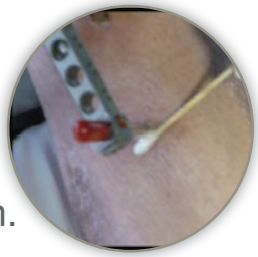
2 Shower using a mild soap, or Johnson's Baby Shampoo on a clean laundered washcloth daily to frame area. Run water on frame and skin. Stitches can get wet and soapy (do not cover).

3 Pour a small amount of Sterile Normal Saline / Sterile Sodium Chloride into a clean cup.

4 Place sterile cotton swabs in the solution.

5 Use only 1 cotton swab per pin site.

6 Apply cotton swab to pin site with moderate pressure, never leaving the site.

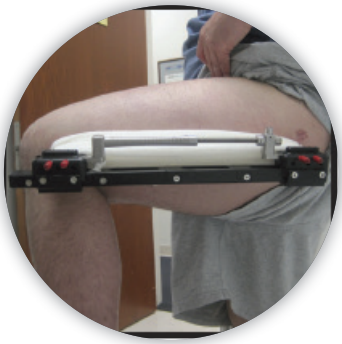


Go around the pin site and then up the pin.

****If contact is lost with the pin site (where the pin enters the skin), use a new cotton swab. Once the cotton swab is drawn up the pin, don't go back down.*

Do not use the same cotton swab on another pin.

7* Wrap pins in groups/clusters with gauze wrap.



***Monolateral Frame Exception to Step 7**

The gauze should be wrapped around the frame from the upper pins to the lower pins; positioned between the skin and the frame.

Do:

- Follow the pin care directions exactly, using proper pin care technique.
- Call the doctor's office for a follow-up visit.
- You may go into a chlorinated pool after 4 weeks, **after seeking surgeon's approval.**

Call your doctor at the first sign of infection (see next page).

Don't:

- You are **NOT** allowed to go into the ocean, pond, hot tub or lake.
- Don't allow animals to lick the frame area.
- Don't use the same cotton swab on more than one pin site.
- Don't use the same cotton swab if contact is lost with the pin site (where the pin enters the skin). Use a new cotton swab.
- Once the cotton swab is drawn up the pin, don't draw it back down to where the pin enters the skin.

SIGNS OF INFECTION:

- **Increase in pain level**
- **Redness/heat on skin**
- **Drainage** *(some bleeding from the pin site is normal during the first week.)*
- **Fever**
- **Numbness/tingling**

Contact you doctor immediately if you exhibit any of these signs.

ERC 3P QUICK REFERENCE GUIDE

For complete instructions, refer to the PRECICE® ERC 3P Patient Manual.

IMPORTANT - Before Starting

- **Do not** use if you or someone around you has a pacemaker or other electronic implanted device.
- **Do not** have an MRI scan taken or have the ERC near an MRI scanner.
- **Remove** the following items from yourself and within **1 foot** of you:
  - All loose metal items including: keys, jewelry, watches, magnetic credit cards, etc.
  - Wireless devices and small electronics such as cell phones, laptops, iPads, etc.
- **Always** follow the prescription from your doctor.
- **Ensure** you can understand the language on the screen.

Power On & Set-Up

1. Plug in ERC to power on.
2. Keep in case.
3. Press green Go button to start initialization.
   (NOTE: This step is only applicable if your doctor has turned on the coupling sensor.)

Performing a Session

1. Review patient summary.
2. Press Go button and alignment light turns on.
3. Align ERC on leg by:
   - Pointing ERC towards feet as indicated on screen.
   - Use alignment window and center over implant and mark on your leg.
   - Align with lines on sides of purple handles and base of ERC.
4. Press Go button to start lengthening.
5. Keep ERC on leg until it stops and screen shows completion.
6. Press green button to finish the session.

Finishing Session

1. Unplug when session is complete.
2. Place in case.
3. Close case using latches.

Smart Technology Icons

Icon	Meaning	What to Do
ERC connected with implant	The ERC is connected with the implant magnet.	Continue with your session.
ERC not connected with implant (code 12)	The ERC is not connected with the implant magnet.	Reposition and realign, then press Go until icon indicates ERC is connected to the implant.
Implant stall (code 13)	The ERC is not lengthening properly.	Realign the ERC using the mark on your skin and the viewing window, alignment lines on the ERC. If the error code continues to display, please contact your physician.

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LC0228-C

Strut Adjustments:

If you have an external fixator, and if warranted, you will be given and taught how to do your 'adjustment schedule'. It is imperative that this schedule **NOT** be completed all at once during the day. Moving bone via the struts, is best done slowly and regularly. It hurts less, creates better bone, and is better for the soft tissues.

Prescription

Date	Day	Strut 1	Strut 2	Strut 3	Strut 4	Strut 5	Strut 6
12/13/12	0	145	121	118	92 [a]	106	87
12/14/12	1	144	120	118	92 [a]	106	87
12/15/12	2	144	120	117	91 [a]	105	86
12/16/12	3	143	119	117	91 [a]	105	86
12/17/12	4	142	118	116	90 [a]	105	85
12/18/12	5	142	117	116	90 [a]	104	85
12/19/12	6	141	117	115	89	104	84
12/20/12	7	141	116	115	89	103	84
12/21/12	8	140	115	114	88	103	83
12/22/12	9	139	114	114	88	103	83
12/23/12	10	139	114	113	87	102	82
12/24/12	11	138	113	113	87	102	82

Strut Change-Outs

Change-Out	Strut	Overlap Interval		Strut Change	
		First Day	Last Day	From	To
a	4 (Green)	0 (12/13/12)	5 (12/18/12)	7107-0210 Short Standard	7107-0205 Extra Short Standard

- Strut adjustments start on the date for "Day 1" as shown in the picture above.
- **Go Slowly!!** Break the struts up into three groups (i.e., struts 1 & 2, struts 3 & 4, struts 5 & 6). Only adjust one group at a time (i.e., struts 1 & 2 in the morning, struts 3 & 4 at noon, struts 5 & 6 in the evening). Some patients find it easier to group the struts by visibility, especially if they need assistance with the back struts. You will be taught strut adjustments during your stay in the hospital. (You may also refer to the website video).

- In terms of gradualness, turn each strut only 1mm at a time. Look at all of the struts in the morning. This means that some struts will need to be broken up over the day. If a strut needs to be turned more than 1mm, you will turn it more than once in the day.

  If you miss a day, **DON'T TRY TO MAKE IT UP!!!** This is very "anti-gradual". If you miss a day, simply continue the schedule one day behind.
- If you fall two days behind, **DON'T TRY TO MAKE IT UP!!!** Instead, if you fall two days behind, **CALL THE OFFICE** for further direction.
- The highlighted column in the above picture (green) indicates that a strut needs to be changed. Your appointment needs to be on a day that is highlighted. The strut will be changed in the office.

Beware: struts can move by themselves! Even after completion of strut adjustments, all strut numbers and connections **should be checked daily** to ensure that proper settings are maintained. You may be provided with a foot plate/night splint or darco shoe (surgical walking shoe). The foot plate will aid in maintaining your foot in a neutral position. A darco shoe would be used while walking and bearing weight. These should be removed 2-3 times per day for 30 minutes at a time. The foot plate should be cleansed daily. This will reduce the likelihood of any skin irritations.

Sutures/Staples:

You will be discharged from the hospital with either sutures or staples. If you are discharged from the hospital with the original operative dressing, remove the dressing 2 days after surgery. Follow the above directions if you have an external fixator. If your surgery does not include an external fixator and you are discharged with staples or sutures, you may shower 4 days after the date of surgery. Staples and sutures will be removed at your first postoperative visit in the office 2 weeks after surgery. **Please remember to call the office to schedule your post operative visit.**

PHYSICAL THERAPY

Stretching the joints after surgery is important. Exercise for range of motion of the joints above and below the bone cut is critical. For example, the knee and ankle must be exercised when having a tibia procedure. As the adjustments are being done, the bone is growing longer. We want to ensure that the soft tissue also stretches. Range of motion exercises for those undergoing ankle distraction surgeries is also imperative. You will be taught basic stretches and exercises by our physical therapists while in the hospital. Physical therapy will be ongoing at home and continues with out-patient therapy after your first postoperative visit.

The following are specific exercises for external fixator patients. They should be completed on a daily basis. They are divided into 'Tibia', 'Femur', 'Hinged Foot/Ankle', and 'Fixed Foot/Ankle'. You may also view these exercises at http://www.youtube.com/watch?v=hE8m9Ujn104. Modifications to these exercises may be necessary dependent on your particular situation.

TIBIA

Calf Stretch:

Sit on bed as shown with your knee straight. Use your green stretch strap to pull your foot back towards you.

Hold for_____seconds

Perform_____repetitions_____times a day

Passive Knee Extension With Hand:

With your foot on a towel roll or pillow, use your hands to gently press down above your knee to help flatten in out on the bed.

Hold for_____seconds

Repeat_____repetitions_____times a day.

Knee Flexion Step 1:

Sit in a chair on a hard floor with socks on.
Slide your_____foot backwards as far as tolerated to allow for bending of your knee.

Perform_____repetitions____times a day.

Knee Flexion Step 2:

Cross your legs at the ankle and use your good leg to push your leg backwards to feel more of stretch.

Then slowly return to the starting position.

Perform____repetitions__times a day.

cont.

TIBIA

Active Assistive Knee Extension:

Sit in a chair.

Put your good leg behind your_____leg at the ankles.

Use your good leg to help straighten your_____leg until your knee is straight.
Perform_____repetitions_____times a day.

Ex-fix Heel Slides Step 1:

Start with your_____leg straight on the bed

Ex-fix Heel Slides Step 2:

Slide your_____heel back towards your buttocks.
Then slide back to the starting position.
Be sure to control the entire movement smoothly.

Perform_____repetitions_____times a day

Proper resting position type 1:

Place a towel roll under your_____ankle. Gently relax your _____leg to allow your knee to slowly lower down to the bed.
Do throughout the day when not ambulating.

Proper resting position type 2:

If your fixator extends into the foot place firm object under the last ring of you external-fixator or under your ankle if frame does not cover your foot.

This allows your knee to become as straight as possible (flat on the bed)
Do throughout day when not ambulating

TIBIA

Ex-fix SLR Step 1:
Gently squeeze your_____knee towards the bed. Bend the same foot back towards you.

Ex-fix SLR Step 2:
Keeping your knee straight, lift your_____leg of the bed to a height of 12-18 inches.

Hold_____seconds

Perform_____repetitions_____times a day

FEMUR

Knee Flexion: Dangle

Sit in a chair or on the edge of your bed and let your operated leg just hang downwards with gravity. The operated leg can be supported by the opposite leg. The goal is right angle (90 degrees).

Perform_____repetitions_____times a day

Knee Flexion Step 1:

Sit in a chair or on the edge of your bed

Knee Flexion Step 2:

Slide your___foot backwards as far as tolerated to allow for the bending of your knee. Use your good leg to assist your_____leg further backwards for a greater stretch.
Goal is right angle (90 degrees).

Then slowly return to the starting position.

You may want to put your foot on a towel to allow the foot to slide easier.

Perform_____repetitions_____times a day

cont.

FEMUR

Heel Slide Step 1:

Start with your_____leg straight on the bed

Heel Slide Step 2:

Slide your_____heel back towards your buttocks. Then slide back to the starting position.

Be sure to control the entire movement smoothly. Perform repetitions times a day

---

Passive Knee Extension:

Place a towel roll under your_____ankle to allow your knee to become as straight as possible.

This is a good resting position and should be used throughout the course of the day.

Prone Lying:

Lie on your stomach_____times a day for_____minutes at a time.

This will allow for stretching of your hip flexors

cont.

FEMUR

Prone Knee Flexion:

Lying on your stomach, slowly bend your_____knee as shown.

Perform_____repetitions_____times a day

SLR Step 1:

Gently squeeze your_____knee down towards the bed.

SLR Step 2:

Keeping your knee straight, lift your_____leg off the bed to a height of 12-18 inches.

Hold for_____seconds.

Perform_____repetitions_____times a day.

Hinged Foot/Ankle

Ankle Active PF/DF Step 1:

Unlock frame as instructed by your Physician Assistant or Physical Therapist. Place firm object under top ring so your foot ring cab clear the bed.

Bend your_____foot back towards you as far as possible

Ankle Active PF/DF Step 2:

Slowly push your foot away for your body and try to point your toes towards the opposite wall.

Perform repeatedly in a slow fashion so your foot goes all the way towards you then away from you.

Perform_____repetitions_____times a day.

Calf Stretch with strap:

With your frame unlocked.
Place your green strap around the ball of your foot as shown. Gently pull the strap so your foot bends back towards you.

Hold for_____seconds

Repeat_____repetitions_____times a day

Great Toe ROM Step 1:

Gently use your hands to stretch your toes back towards your body. If you cannot reach, have someone perform for you.

Great Toe ROM Step 2:

Gently use your hands to stretch your toes away from your body. If you cannot reach, have someone perform for you.

Perform_____repetitions_____times a day

Fixed Foot/Ankle

Great Toe ROM Step 1:

Gently use your hands to stretch your toes back towards your body. If you cannot reach, have someone perform for you.

Great Toe ROM Step 2:

Gently use your hands to stretch your toes away from your body. If you cannot reach, have someone perform for you.

Perform_____repetitions_____times a day

Forefoot Stretch with Strap:

Place your green strap around the top portion of your foot as shown. Gently pull the strap back towards your body so your forefoot bends back as well.

Hold for_____seconds

Perform_____repetitions_____times a day

NUTRITION

The food you eat can greatly impact your recovery and healing. A nutrition consultation can be obtained while admitted to the hospital. Proper nutrition can prevent complications such as constipation as well. Focusing on whole grains, whole foods (i.e., fruits and vegetables) and proteins are important. Whole grains and whole foods will assist in preventing gastrointestinal problems in addition to supplying your body with vitamins and minerals. Your body will require ample amounts of protein for healing. Good sources of protein are meats, fish, beans, nuts, and dairy products, including milk and cheese. We also recommend a daily probiotic for those on antibiotics.

Certain medications can be inhibited by some foods and alcohol. For example, alcohol intake can significantly inhibit the effectiveness of antibiotics. Alcohol should be avoided if you have been prescribed antibiotics. **Alcohol can have a fatal interaction with narcotics.**

Vitamin D, Calcium and Vitamin C Supplementation:

Vitamin D is required for bone growth and remodeling. If indicated, blood work will be done to determine the dose of Vitamin D for your surgery. Based on this blood level, the proper dosage of Vitamin D supplementation will be prescribed. Vitamin D cannot adequately be absorbed by the body without calcium.

Adequate amounts of calcium are required for the body to function and heal. Calcium citrate is recommended over any other calcium supplement. If it is necessary for you to take calcium for your surgery, you will be advised to take Citracal Maximum, 2 tablets by mouth two times a day for 12 weeks. Calcium supplements can interact with different prescription medications, including antibiotics (Doxycycline), bisphosphonates (these should be stopped before surgery) and high blood pressure medications. You may need to take the calcium supplements a few hours before or after taking the prescription medications. Ask your pharmacist about the possibility of any interactions. Dependent upon your past medical history or blood work results, an endocrinology consultation may be needed to improve your healing ability.

Our protocol also consists of Vitamin C supplementation. Vitamin C assists with collagen formation. If it is necessary for you to take Vitamin C for your surgery, you will be advised to take 'Vitamin C, 500mg per day for 12 weeks.' Continuation of these supplements, beyond the initial 12 weeks prescribed, may be needed.

EXTERNAL FIXATOR REMOVAL

When your external fixator is ready for removal, a date will be scheduled for removal in the operating room. Once removed, the bone has lost support from the external fixator. You will 'take a step back' and limit weight bearing to 50% while returning to the use of crutches for about two weeks. This may be modified on a case-by-case basis. We recommend that you continue to be active during this time, but do not push yourself too hard. If a brace is prescribed, it can be removed for gentle range-of-motion exercises.
You must leave the hospital with a friend or family member.

Follow-up:

Call to schedule a follow-up appointment in the office about two weeks after surgery. At that time, your cast (or brace) will be removed and a new cast applied. You will typically be allowed to progress to full weight bearing at this time, and given a prescription for physical therapy.

CAST / BRACE CARE

A cast or brace may be used after surgery to support and protect the bones and soft tissue. They reduce pain, swelling and muscle spasm. Swelling can occur within the cast. It is very important to prevent excessive swelling. Remember to elevate the casted extremity, preferably above the level of your heart. Moving your toes (or fingers) will promote swelling reduction. It is extremely important **NOT** to stick anything into the cast. If you become itchy within the cast, **IF AND ONLY IF** your incisions are healed, you may use a hair dryer on **COOL** setting and blow air into the cast. This will relieve moisture and itching. In severe cases of itching, low doses of Benadryl may be taken. Keep the cast dry. Use a bag to cover the cast when showering.

Contact our office immediately if any of the following occur: increased/abnormal pain, numbness/tingling in your toes or fingers, burning or stinging, excessive swelling below the cast, loss of movement of the toes or fingers, skin discoloration (pale, blue, dusky color). You also need to contact us if the cast gets very wet.

PRESCRIPTIONS

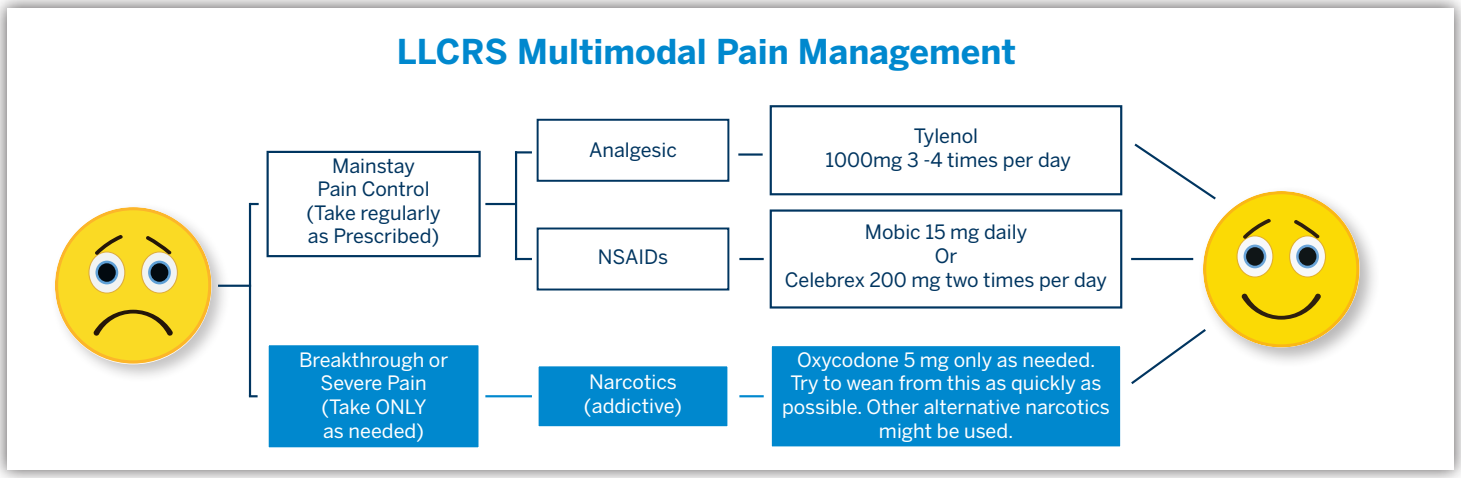
It is best if refills are prescribed during follow-up appointments. Refills are electronically prescribed to those pharmacies that have the capabilities of accepting e-prescriptions. If a refill is needed prior to your next appointment, please contact the office one or two days prior to completion of the medication. In situations where a prescription has to be mailed, contact us one week prior to completion to allow time for first class mailing. We do not send prescriptions overnight via alternative mail carriers.

Physical therapy (PT) and occupational therapy (OT) prescriptions will also be provided at follow-up appointments. If a PT or OT prescription renewal is required prior to your next appointment, please provide the office with either a fax number or mailing address.

Pain Management and Pain Management Referral:

Your recovery and rehabilitation is greatly affected by the management of your pain. Your pain management requires specialized care. There are situations where patients will be referred to a pain management specialist. A pain management physician is a doctor who specializes specifically in pain management. These physicians have cutting-edge techniques to control your pain. He or she will manage and adjust your current pain medication regimen and construct a regimen which best suits your individual pain needs. He or she will also provide you with your pain medication prescriptions. In addition, when the time comes, he will create a plan of care for medication discontinuation. Those previously treated by a pain management physician will automatically be referred back to them. We recommend, but you are not limited to using a physician here at Hospital for Special Surgery.

Following your surgical procedure, you can anticipate postoperative pain. Patients experience pain differently and the amount of medication needed varies substantially. The vast majority of patient's pain is able to be controlled with the following medication regimen, or less. The below list of medications is the maximum dosage of pain medication our office will provide:



Pain typically decreases during the first week after surgery. If you are making gradual adjustments to an external fixator, or intramedullary lengthening nail, pain typically decreases when adjustments are completed.

You should continually be working towards decreasing the dosages of your pain medication. Some patients do not require narcotics at all. Always work towards that goal. If you are discharged on a prescription regimen that is in excess of the above prescription guidelines, it is to be understood that you should gradually reduce your discharge dosages to the above mentioned dosages for pain management.

If you are unable to gradually reduce these excessive dosages you will need to be followed by a pain management specialist (either at HSS or locally) to obtain pain medication in excess of the above mentioned regimen.

HSS Pain Management Physicians

Dr. Robert Griffin	212.774.2944	Dr. Christine Peterson	212.606.1036
Dr. Semih Gungor	212-774.2176	Dr. Daniel Richman	212.606.1768
Dr. Joseph Hung	203.705.0870	Dr Faye Rim	917.260.4572
Dr. Vladimir Kramskiy	646.797.8490	Dr. Seth Waldman	212.606.1686
Dr. Anuj Malhotra	212.606.1829	Dr. David Wang	212.606.1646

X-RAY, MEDICAL RECORD AND HARDWARE REQUESTS

X-Ray Requests:

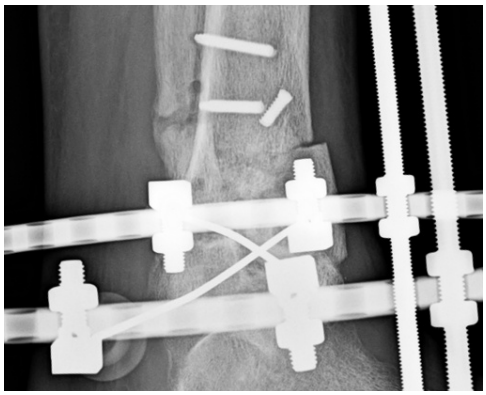
Copies or CDs of x-rays, or any radiological exam, taken at the office or hospital may be obtained through the radiology department by calling 212-606-1135. Office personnel are not permitted to dispense these requests.

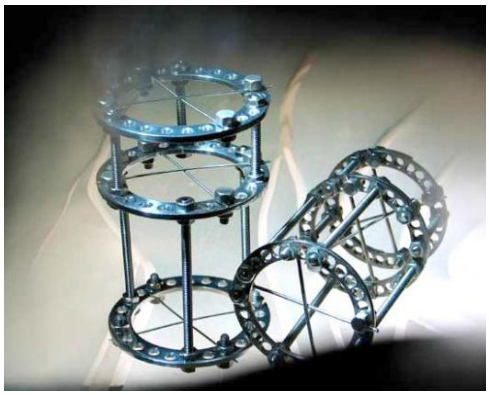
Medical Records Requests:

Copies of office-dictated notes, medical reports and test results may be obtained with a written request. The request must indicate the patient's name, date of service requested and location/fax # of where to send the record to. Please allow ample time for the request to be completed and sent. In-patient medical record requests may be obtained through the hospital's medical record department by calling 212-606-1254. Please allow ample time for all medical record requests.

Hardware Requests:

Removed internal and external hardware may be obtained for personal possession. The request for external hardware should be conveyed to your surgeon prior to its removal. Internal hardware should be conveyed to the office staff. Internal hardware requests must be in writing on a designated form. Internal hardware may take months to be obtained following processing through the hospital.





FORMS, LETTERS AND PAPERWORK

We are happy to assist you with any forms, letters or paperwork that you may need. It is best if the patient drafts the letter/completes as much of the paperwork as possible for the office staff. This will ensure complete and correct transmission of information. We will edit the forms and letters appropriately. Please ensure that you give us ample time to complete whatever it is that you need.

IMPORTANT HOSPITAL TELEPHONE NUMBERS

Access Private Nursing Service	212.774.7187
Admitting	212.606.1241
Belaire Guest Facility/Hotel	212.606.1989
Call Center	212.606.1710
Case Management	212.606.1271
Coast to Coast	212.606.1921
Family Atrium/Waiting Room (4th Floor)	212.774.2201
Hospital for Special Surgery Main	**212.606.1000**
International Center	212.606.1186
Medical Records	212.606.1254
MyHSS Help Desk	844.269.4509
Pastoral Care	212.606.1757
Radiology Records/Copies	212.606.1134

OFFICE CONTACT INFORMATION

Office Location
519 East 72nd Street, Suite 204
New York, NY 10021

Mailing Address
535 East 70th Street
New York, NY 10021

Hospital Address
Hospital for Special Surgery
535 East 70th Street
New York, NY 10021

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