The Ganz Osteotomy:
A guide for patients and their families

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What is the Ganz Osteotomy?

- Also known as “Peri-acetabular osteotomy” (PAO) or “the Bernese Osteotomy”

- A surgery designed to re-shape the hip joint for patients with hip dysplasia using a series of controlled breaks in the pelvic bone

- First developed in Switzerland by Dr. Reinhold Ganz in the 1980’s for active people with hip pain and hip dysplasia
What is *Hip Dysplasia*?

-The hip is a ‘ball-and-socket’ joint. When the socket does not form completely as an infant, this is called *dysplasia*.

-Normally the hip socket (the *acetabulum*) forms directly over the ball. In patients with dysplasia, the socket is too shallow and too angled to hold the ball effectively. This can cause pain and premature arthritis over time.

-In patients with dysplasia, the ring of cartilage around the edge of the hip joint (the *labrum*) takes on more force and is more likely to be damaged and need repair.
What is *Hip Dysplasia*?

**Normal Hip Joint**

**Dysplastic Hip Joint**
What is *Hip Dysplasia*?

- Notice that, in the normal hip (on the left), the socket is directly over the ball.
- Whereas in the dysplastic hip (on the right), the socket is tilted, shallow, and no longer covering the ball. **This is dysplasia.** The socket never formed properly.
- Because the hip socket is mis-shapen, the ball is able to ‘slip out’ of the joint and the cartilage on the edge of the socket is worn out more quickly in dysplasia.
Why does the Labrum get Damaged?

- In the normal hip, the Labrum (represented by the light blue dot) is on the edge of the socket. In the dysplastic hip, because the socket is shallow and tilted, the labrum is directly over the ball. This is why the labrum is more likely to be damaged in patients with dysplasia.
Why does the Labrum get Damaged?

- The red arrows added here are to show the lines of force that the ball is exerting on the socket when you stand, run, jump, etc. Notice how the force is directed at the socket in the normal hip. In the dysplastic hip, the force is directed at the labrum. This is why the labrum gets damaged in patients with dysplasia.
What about Hip Arthroscopy?

- Because most patients with painful hip dysplasia usually have a torn or damaged labrum, we usually recommend hip arthroscopy 6 weeks prior to the Ganz Osteotomy procedure.

- This is a minimally invasive procedure during which your joint space can be explored and your labrum can be repaired (or reconstructed) if necessary.

- Once the labral repair or reconstruction has healed, the Ganz osteotomy will move the labrum into a better position (along with the socket) where it is less likely to tear again.
Who should consider a Ganz Osteotomy?

- An active patient with:
  - Hip pain
  - Hip dysplasia
  - Minimal arthritis
  - A round femoral head
What are the Goals of a Ganz Osteotomy?

- Restore the proper shape to the hip joint
- Reduce pain in the hip joint
- Prolong the life of the hip joint
What are the Goals of a Ganz Osteotomy?

- Restore the proper shape to the hip joint
- Reduce pain in the hip joint
- Prolong the life of the hip
- Delay or eliminate the need for a hip replacement in the future
Why not Just Replace the Hip?

-A hip replacement is a mechanical joint made of plastic, metal or ceramic.

-Mechanical joints wear out over time.

-When a joint replacement wears out, you must have surgery again to fix it.

-These are not issues if you are elderly... but the younger and more active you are, the more likely a hip replacement will wear out over time and have to be repaired surgically again in the future.
Why not Just Replace the Hip?

-Your activity is also limited after a hip replacement:
  -Should not run or jump
  -Must avoid certain hip positions

-We therefore don’t recommend that younger people get their hips replaced if they can avoid it.
What is the Surgery like?

- Surgery usually takes about 2 hours
- Complications are rare, but may include:
  - Infection (<1%)
  - Scar formation
  - Damage to nerves/blood vessels (<1%)
  - Blood clots (<5%)
  - One of the bones may not heal (5%)
  - Need for blood transfusion (5-10%)
What is the Surgery like?

- The operation involves making controlled cuts in the three bones that make up the pelvis:
  - Ilium
  - Ischium
  - Pubis

- Once these cuts are made, the socket is moved into its correct position and screws are used to hold it there until it heals.

- Here is a step-by-step description using real intra-operative x-rays and bone models to explain the procedure.
Step By Step: Intraoperative Xray controlled cuts are made in the ischium and pubis

- Pubis cut already made
- Hip socket
- Ball
- Making the ischium cut
- Ilium
- Pubis
- Ischium
Pelvic Model

View from other side

- Pubis
- Ischium
- Ilium

Pubis cut made
Making Ilium cut
Ischium cut made
Pelvic Model

View from side

Pubis cut made

Pubis

Ilium cut made

Ischium

ischium cut made
Step By Step: Intraoperative Xray
We can now move the cup to a better position!

Pull!
Pull!
Rotates the cup!
Pubis
Ilium
Ischium
We can now move the cup to a better position!
Step By Step: Intraoperative Xray
We can now move the cup to a better position!
Step By Step: Intraoperative Xray
Now we place 3 pins to temporarily hold the bone in the corrected position.
Step By Step: Intraoperative Xray
The pins are replaced by screws and we are done

Ilium
Pubis
Ischium
Pelvic Model
Front view after Ganz Osteotomy

Ilium
Hip socket
Pubis
Ischium
Postoperative X-ray
What is the Incision like?

About 4-6 inches
What is the Anesthesia like?

- Patients usually go to sleep (general anesthesia) and get an ‘epidural’ anesthetic for postoperative pain control.

- An epidural is a soft plastic catheter placed between the bones in the back to deliver numbing medication to the nerves.

- Makes you numb from the waste down and therefore reduces pain significantly after surgery.

- Can be left in place for 1-2 days after surgery to help with pain.

- You will need a catheter in your bladder while the epidural is in.

- Complications are rare. Your anesthesiologist will discuss with you prior to surgery.
What about the Hospital Stay?

- Hospital stay averages 3-4 days
- Labs drawn daily
- Mainly focusing on physical therapy for getting mobile with crutches
- You will have a small plastic drain tube in the wound which removes any blood from the wound for about 2 days.
- Your bladder catheter will be removed in two days
The Recovery:
What Can I Expect?

- **Weight-bearing**: 6 weeks use of crutches (no weight bearing) is required. After that, it can take an additional 2-4 weeks of partial weight bearing with crutches before you actually no longer need crutches.

- **Driving**: You can drive an automatic when you are able to bear weight fully on your right leg and are off of pain medications. This takes about 6-8 weeks if you have surgery on your right leg and 2-4 weeks after surgery on your left leg.

- **Office Follow ups**: 2 weeks, 6 weeks and 3 months postop.

- **Work**: You can return to sedentary work (sitting work) in 2-4 weeks after surgery. Labor intensive work takes longer. Ask your doctor to estimate based on your Profession.

- **Physical therapy**: for 6 months or more

- **Full Recovery**: Can take up to a full year
Preparing Your Home: Suggestions from Former Patients

- Things that may make life easier at home after surgery:
  - Loofah on a stick (to help wash feet and lower legs)
  - Grabber
  - Pre-made slushy ice bags:
    - 2 cups water, 1 cup rubbing alcohol, +/- food coloring.
    - Add to a 2 quart sealable plastic bags
    - Place bag inside another bag (double bag)
    - Freeze the double bag for 12 hours before use.
    - Wrap in a towel and apply to the hip area.
    - Make more than 1 so you can swap out as needed
  - Bedside commode (depending on mobility after surgery)
  - Shower seat (depending on mobility after surgery)
  - Clear walking paths in your home
Are there any Issues with Child Birthing in the Future for Females?

- Studies have shown that Ganz osteotomies do not effect your ability to deliver babies naturally.

- Ganz osteotomies do not change the shape of the birthing canal.
Where can I Learn More?

- There are a number of Scientific publications on the results after Ganz Osteotomies.

- Recommended scientific publications for further information:


We hope this informational slide show has been helpful.

It is important that you have all of your questions answered before surgery.

Should you have any additional questions please contact Drs. Hugate and White to set up an appointment to meet in person.

Dr. Hugate’s office- (303) 837-0072

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Thank You