

Dr. Myeroff's Shoulder Dislocation Information Sheet

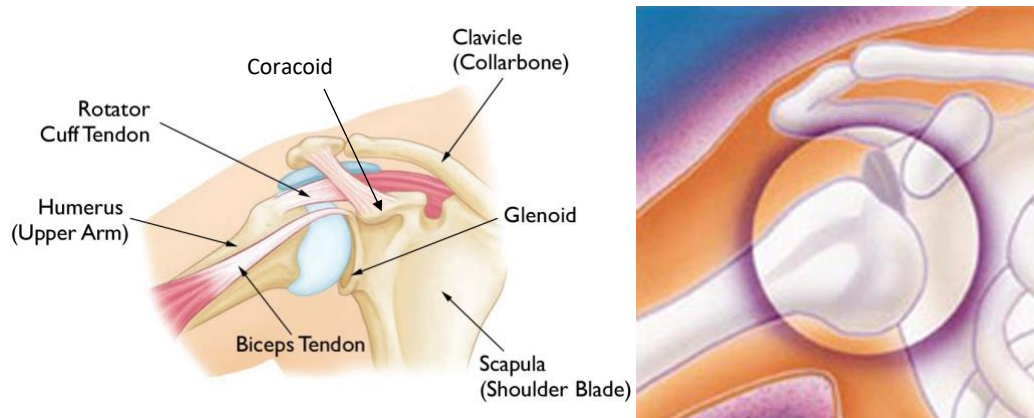


Figure 1 Left: Normal anatomy of the shoulder. Right: dislocated shoulder.
<https://orthoinfo.aaos.org/en/diseases--conditions/chronic-shoulder-instability>

Please scan these codes with your camera phone to learn more from Dr. Myeroff's website as you go!



What is a shoulder dislocation? twincitiesshoulderandelbow.com/shoulderdislocation/

- The top ball of the arm bone (humerus) disconnects (dislocates) from the socket (glenoid) (Figure 1).
- How does it happen?
 - Usually this is caused by an injury (like a fall, car crash, or sporting injury)
 - Direction of dislocation
 - Anterior (out the front) – Most commonly, a traumatic shoulder dislocation occurs when the ball comes out of the front of the shoulder.
 - Posterior (out the back) – Rarely the ball can dislocate out the back of the shoulder
 - More common with seizure or electrocution or bad car crashes.
- What is injured twincitiesshoulderandelbow.com/shoulderinstabilityvideo/
 - The normal shoulder socket is very narrow – this allows a lot of motion.
 - Since the socket is so narrow, ligaments and your labrum are needed to keep your normal shoulder from dislocating
 - Ligaments hold your ball and socket together basically as a rope.
 - Your labrum is the gasket around your shallow socket.
 - This deepens the socket and provides a suction fit.
 - This is also where your ligaments attach
 - Labral tear (Bankart Injury)
 - When the shoulder dislocates the labrum (gasket) tears off of the socket (Figures 2, 3a)
 - This results in a loss of your shoulder's natural suction fit and your ligaments



- This can cause the socket to become less stable long term.
 - A labrum tear will not heal on its own, but may not need to be repaired either.
- Glenoid Fracture (socket fracture or “bony bankart”) (Figure 3b)
 - In severe cases, the labrum will tear off along with a break in the socket bone (glenoid).
 - This can be a small amount of bone (<5% of the socket)
 - This can be a large amount of bone (>15% of the socket)
 - Best seen on a CT scan of your shoulder bones.
 - This fracture decreases the size of your socket further and increases your risk of future dislocations and arthritis.
- Impaction injury (Hill Sachs) (Figure 4)
 - When the shoulder ball dislocates, it can indent the back of the ball
 - The bigger this indentation is, the higher your chance of dislocating again
- Rotator cuff tear
 - The rotator cuff is a group of 4 muscles-tendon units that have a major role in your shoulder function.
 - Connects from the shoulder blade (scapula) to the proximal humerus (ball of the shoulder).
 - The rotator cuff can tear when the shoulder dislocates
 - Rare under the age of 45 years-old
 - This is more common with increasing age over 45 years-old
 - Rotator cuff tears can increase your chance of another dislocation as well as long term shoulder weakness and dysfunction.
 - Rotator cuff tears do not heal on their own
- Proximal humerus fracture
 - In severe cases there can be a fracture of the ball of the shoulder (proximal humerus).
 - In most cases this is a fracture of the greater tuberosity (where your rotator cuff attaches).
- Nerve or artery injury
 - There are many important nerves and arteries around the shoulder
 - A dislocation can stretch (or very rarely tear) these structures
 - Axillary nerve is the most common. This nerve powers your deltoid, the biggest shoulder muscle.
- What is the consequence of a dislocation?
 - Recurrence – The shoulder may continue to dislocate in the future.
 - How likely? Without surgery, repeat dislocations is common.
 - Overall 60% of patients continue to have dislocations
 - 70% of patients <20 years-old
 - 90% of contact athletes
 - Types or recurrence:
 - Dislocation: The shoulder clearly fully dislocates, often requiring medical attention

- Subluxation: When the shoulder does not fully come out of the joint, but you don't trust the shoulder and it feels 'loose' like it may dislocate.
- What can cause a re-dislocation?
 - Traumatic: Another severe injury causes a re-dislocation.
 - Repeat re-dislocations require less force than the first one.
 - Atraumatic: When the shoulder is very unstable (like when there is a lot of bone loss), it can dislocate during regular life or even in your sleep.
 - You may not "trust" the shoulder.
- Osteoarthritis
 - Shoulder dislocations can lead to shoulder arthritis
 - 30% of patients develop mild arthritis
 - 17% develop severe arthritis
 - Your risk increases based on the number of dislocations

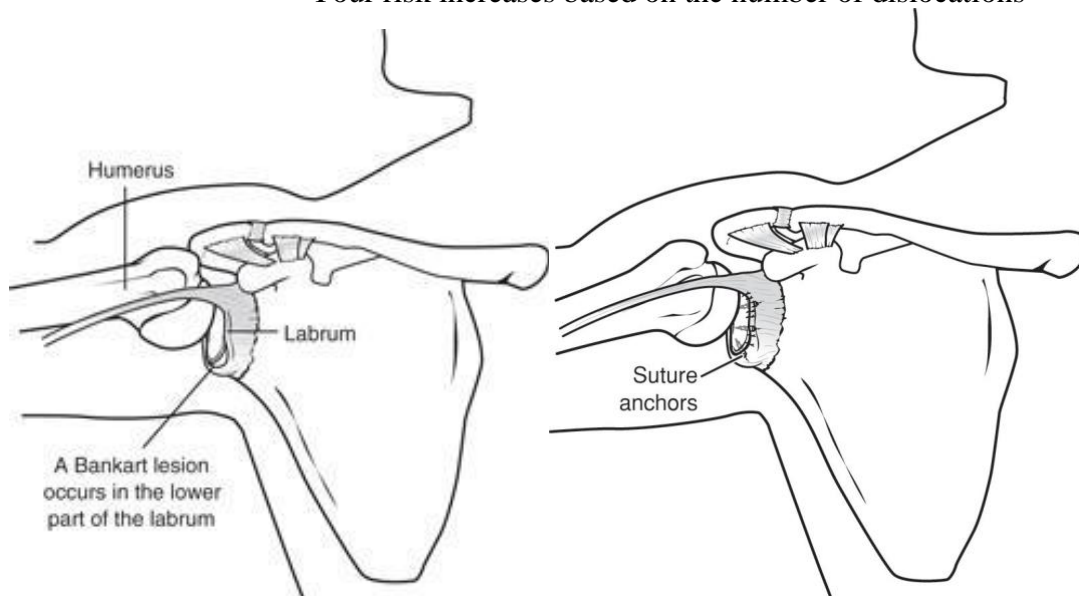


Figure 2 Left: Bankart tear - the labrum is detached from the front/bottom of the socket. Right: Labrum repaired with anchors back to the socket

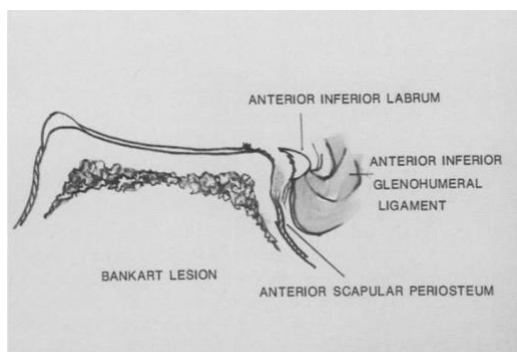


Figure 4a Left: Labrum torn from the socket (Bankart Br J Surg 1938).

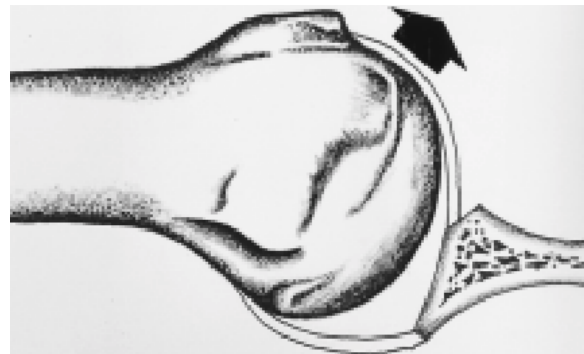


Figure 3b Bone loss (fracture) from the socket severely decreases stability of the shoulder (Itio JBJS 2000)

from the socket (Bankart Br J Surg 1938). Right: Bone loss from the socket severely decreases stability of the shoulder (Itio JBJS 2000)



Figure 55Hill Sachs injury (indentation in the top of the humeral head).

How is a shoulder dislocation diagnosed?

- We listen to your story:
 - Usually starts with a painful injury, and a change in shape of the shoulder.
 - Often requires relocation in the emergency department with pain medications and sedation (especially the first time).
- **Exam:** Immediately, we will check that all of your nerves and arteries are working. Once you are more comfortable, in future visits, a thorough physical exam of your shoulder is performed looking at the strength of each of the muscles in the shoulder, your range of motion, and stability of the shoulder joint. This can be quite intricate but it is imperative in order to obtain the right diagnosis and treatment plan. Forgive me if I ‘talk shop’ with my trainer, PA or the residents/fellows during this process. I promise I will explain everything to you.
- **Imaging:**
 - X-rays: If you haven’t had them recently, we will obtain X-rays which help rule out things like a fracture and arthritis. These can tell us a lot about your bones.
 - You will usually have x-rays in the emergency department confirming the dislocation and successful relocation.
 - Please bring these with you to your appointment.
 - MRI: If it hasn’t been completed, an MRI may be ordered
 - This test involves several hours of your time and provides a wealth of information about your soft tissues (tendon, ligament, muscle, cartilage) and helps me to zero in on your diagnosis and what your options are.
 - This helps me evaluate your labrum and rule out a rotator cuff tear.
 - Quality
 - Preferably obtained at Health Partners / TRIA so I can access the images.
 - This allow allows me to see your images immediately.
 - I know these are of very high quality
 - Please avoid the ‘open’ MRI as the quality of these images are poor.

- CT Scan
 - When I suspect a lot of bone injury, I may order a CT scan to see the bones better.
 - This will help me understand your injury and allow you to choose the best treatment plan.

Emergency Care:

- The first goal is to safely reduce your shoulder into its normal location as soon as possible, but not more than 24 hours later.
 - Sometimes can be done at the site of injury
 - More often requires an emergency room visit
 - You will receive pain control and sometimes sedation to relax your muscles and allow a smoother reduction.
 - More images will be obtained to confirm the shoulder joint is reduced.
- **After your shoulder is reduced**
 - For the first several weeks it will be important to wear your sling while your muscles recover.
 - This will limit your pain and help keep the shoulder stable.
 - Pain and swelling control
 - Pain control
 - You should ice your shoulder for 20 min every hour while awake
 - You should take Tylenol routinely
 - Swelling
 - Sleeping propped upright (or in a recliner) can improve your comfort
 - Come out of your sling 3x per day for elbow wrist and finger motion to limit pain, stiffness and swelling of these joints.
 - Modification of your activities
 - Avoiding activities that provoke the pain or give you a sense that the shoulder may dislocate.
 - Temporary work restrictions will be provided if appropriate.
 - Early communication with your employer is important as you will not be able to return to heavy use of the arm for some time.

Treatment options?

- Goal:
 - The goal is to restore your function in the best and safest way possible.
 - Minimize risk of future dislocations or subluxations
 - **Your risk of another dislocation increases with several factors:**
 - Age <30 at initial dislocation
 - Over age 45, your chance of re-dislocation is lower but your chance of having had a rotator cuff tear increases.
 - Male gender

- Athlete (especially contact sports)
- Bone loss (bony bankart, hill sachs)
- Routine dislocations
 - Especially with trivial events (like sleeping)
- In general, young males < 20 years old stand a 95% chance of re-dislocating in the future

Non-operative Treatment

The goal of non-operative therapy is to obtain a stable, trustworthy shoulder without the risks and resources associated with surgery.

- **Indications**
 - Those averse to surgery
 - Medically unwell
 - Very low demand
 - Unable or unwilling to comply with rehab
 - Patients >45 years-old
 - Or other situations where the risk of recurrence is relatively low
- **Non-operative Risks**
 - Recurrence: Overall, 60% of people treated without surgery will re-dislocate
- **Non-operative Benefits:**
 - Rehab starts sooner
 - Avoid risks of surgery
 - Cheaper immediate costs
 - Less recovery time
- **Physical Therapy** twincitiesshoulderandelbow.com/rehab/
 - Therapy is the first-line treatment for many first-time dislocations.
 - The goal is to
 - Step 1: allow your pain and swelling to subside
 - Step 2: Early recovery
 - Regain your motion in the safe zone
 - Avoid position of apprehension (90-90 position in abduction and external rotation.
 - Retrain your shoulder blade muscles, and do basic strengthening
 - Periscapular proprioception and stabilization
 - Avoid risky activities
 - Step 3: Return to sport or work
 - The addition of formal rotator cuff strengthening
- Typically, you will go to formal physical therapy 1-2x per week and build a self-driven home exercise program.
 - **You will do your exercises 2-3x per day, every day at home.**
 - **Remember “Therapy is not a place you go, it’s a thing you do”!**





Surgery: twincitiesshoulderandelbow.com/preparingforsurgery/

Arthroscopic Bankart Repair

Over that past 20 years minimally invasive arthroscopic stabilization procedures (labral repair) have become increasingly reliable and are now the main treatment for most patients with recurrent dislocations.

- **Indications for surgery**
 - When non-operative treatment is ineffective to keep the shoulder stable
 - Or when your activities and injury have an unacceptably high risk or repeat dislocation.
 - Pain, dysfunction and distrust of the shoulder prevent you from returning to your activities.
- **Benefits of arthroscopic bankart repair**
 - Faster surgery and less scar compared to open surgery through an incision.
 - Decrease your chance of re-dislocation
 - Surgery decreases you risk from 60% → 10% recurrence within 10 yrs.
 - More reliable return to activity
- **Reasons to not pursue surgical repair**
 - When your chance of re-dislocation is quite low
 - >45-years old, single event
 - Unable to abide by the post-operative restrictions and therapy
 - Medical reasons
- **What is an arthroscopic bankart repair?**
twincitiesshoulderandelbow.com/arthroscopicbankartrepairvideo/
 - It is minimally invasive surgery using 1cm incisions
 - Smaller incisions decrease pain and scarring
 - A camera the size of a pencil is used to look into the shoulder and identify all areas of injury, clean out inflamed tissue, and repair the labrum and ligaments back to the to the socket (glenoid) where it belongs.
 - This tightens back the ligaments of the capsule → stability
 - Other procedures: It is common to fix other areas of injury. This will be discussed with you before surgery if I think you may benefit:
 - Biceps Tenodesis (or tenotomy)
 - Used to treat biceps tendon inflammation or SLAP tears commonly seen if the labral tear is large enough.
 - The biceps tendon is moved from where it is torn and inflamed on the labrum inside your shoulder, to a new location outside the shoulder on the humerus bone.
 - This does not result in noticeable weakness
 - There can be temporary cramping or a slight change in the contour of the arm.
 - Remplissage
 - One of your rotator cuff tendons (the infraspinatus) is placed into the impaction injury of the humerus (hill sachs injury) if it



is large enough to require it. This fills the divot and decreases the chance of redislocation but also results in a little more stiffness especially in external rotation after surgery.

- Subacromial Decompression
 - I remove inflamed tissue from the top of the rotator cuff (bursitis) and smooth the spur on your shoulder blade (acromioplasty).
- **Arthroscopic Bankart Repair Risks**
 - Redislocation: the highest risk (14%)
 - Stiffness: Most patients lose a few degrees
 - Other risks are low (1.6% overall)
 - Symptomatic implants
 - Nerve or vascular injury
 - Bone fracture
 - Blood loss or blood clot
 - Infection

Open Bankart Repair

While arthroscopic bankart repair has become the most common surgery for shoulder dislocations in the US, the open repair (through an incision) continues to be the gold standard. It is time tested but does require a larger incision, slightly more post-operative pain, and more scar and stiffness, as well a risk of rotator cuff tear. That said, it has a slightly lower risk of redislocation compared to arthroscopic.

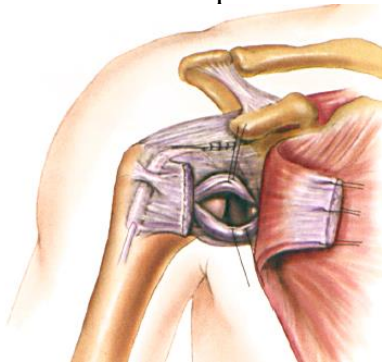


Figure 6 Illustration of an open bankart repair with the rotator cuff pulled to the right. (Pagnani JBJS 2002)

- **Indications for surgery**
 - Similar to arthroscopic bankart repair
 - May be a better choice in more unstable shoulders
 - Contact athletes
 - Mild-moderate bone loss
- **Benefits of open bankart repair:**
 - Lower re-dislocation rate than arthroscopic repair
 - 10% Open vs 14% Arthroscopic
 - Less risky than Latarjet procedure
- **What is an open bankart repair?**
 - Similar goals to an arthroscopic repair
 - Anchor the labrum and ligaments back to the glenoid

- Requires an incision in the front of your shoulder
- Requires the detachment and reattachment of your front rotator cuff muscle (subscapularis)
 - This has to be protected after surgery by further limiting your external rotation
- **Open Bankart Repair Risks**
 - Slightly lower re-dislocation rate than arthroscopic.
 - Slightly more stiffness expected
 - 6% risk of additional complications
 - Blood loss or clot
 - Nerve injury
 - Infection



Latarjet Procedure (coracoid bone transfer) twincitiesshoulderandelbow.com/latarjetvideo/

The Latarjet is a highly dependable procedure for severe shoulder dislocations which are very unstable and have a lot of bone loss. The tradeoff is higher risk of complications but a very low risk that there will be further dislocations (1%).

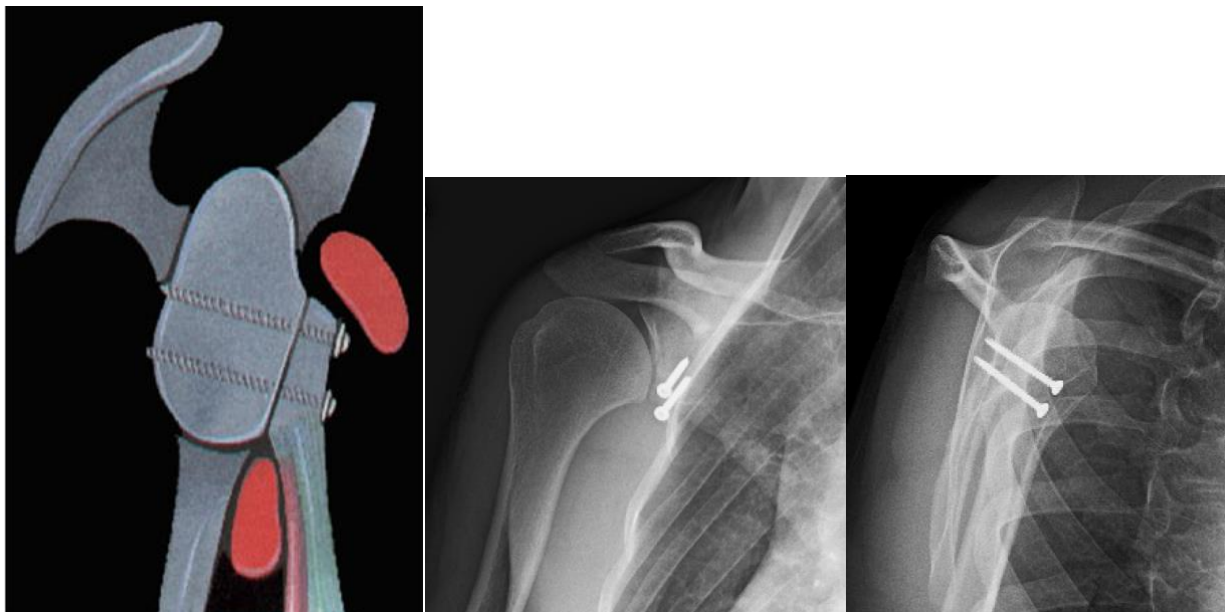


Figure 6(left) The coracoid has been transferred to the bottom of the shoulder socket and screwed in place. Center and Left: Post-operative AP and Lateral X-Ray of a healed Latarjet.

- **Indications for surgery**
 - Severe shoulder dislocations with a high risk of bankart repair failure
 - Contact athletes
 - Severe bone loss
 - Previous, failed bankart repair
- **What is a Latarjet?**
 - Requires an incision in the front of your shoulder
 - Usually I perform this through a split in your rotator cuff.

- Lowers the risk of tearing your rotator cuff
 - Coracoid transfer
 - The coracoid is a bony projection from the front of the shoulder blade
 - Where two of your biceps tendons attach
 - I move this bone and attached tendons to the front of your socket (glenoid)
 - This decreases your risk of dislocation by:
 - Replacing the bone that was lost
 - Providing a sling effect (the muscles support the ball from coming out)
- **Latarjet Risks**
 - Risks are similar to bankart repair except for:
 - Lower risk of re-dislocation (1%)
 - Lower risk of stiffness
 - Overall 7% risk of:
 - Nerve injury
 - Nonunion (graft not healing, or dissolving)
 - Hematoma
 - Infection
 - Fracture



Post-repair Recovery: twincitiesshoulderandelbow.com/recovery/

- Surgery takes about 2 hours and is done outpatient meaning you will go home the day of surgery.
- The biggest commitment is the time, discomfort and rehab associated with the recovery.
- Labrum and ligament healing to bone takes about 3 months
 - Prior to that, it is only the suture holding the ligament to bone. This is not nearly as strong as a healed labrum.
 - For this period of time you will have restrictions to protect the repair.
- How can you help?
 - Stop smoking
 - Close diabetes control
 - Avoid NSAIDs for 6 weeks
 - Abide by your post-op restrictions with 2 main early goals
 - **Avoid injuring the repair:** You must avoid active motion (using your own muscles) of the shoulder. This includes no reaching, lifting, pulling with the shoulder to prevent re-tearing the ligament before it heals.
 - Follow your sling precautions.
 - No lifting >1 pound for 6 weeks.
 - **Avoid stiffness:**
 - You should carefully come out of your sling 3x/day for hygiene and to move your fingers, wrist and elbow

- You will work with therapy and at home on passive shoulder motion (without using your own shoulder muscles).
- 0-6 weeks: You will wear your sling full time except for hygiene, basic therapy for passive motion, and scapular stabilization. No external rotation 30 degrees. Avoid position of instability. You can return to desk work.
- 6 weeks: You will wean out of your sling, I will advance your therapy, you will usually clear you to drive if it is safe. You will begin light strengthening.
- 3 months: You will progress your strengthening. You can begin 'light duty'. You will begin full duty work or return to sport when you are cleared by your therapist or athletic trainer as being safe.
- **You can expect final recovery approximately around 6 months.**

Want more information?

- Please visit:
 - twincitiesshoulderandelbow.com/shoulderdislocation/
 - <https://orthoinfo.aaos.org/en/diseases--conditions/dislocated-shoulder/>
 - <https://orthoinfo.aaos.org/en/diseases--conditions/chronic-shoulder-instability/>
- Regions Hospital / Health Partners Specialty Center
 - Clinical questions: 651-254-8300 option 2
 - To schedule appointments: 651-254-8300 option 1
 - To schedule surgery: 651-254-8399 or 651-254-8338
 - Fax employer or insurance related paperwork ASAP to 651-254-8127.
- TRIA Orthopaedic Center
 - Clinical questions: 952-977-3301
 - To schedule an appointment: 952-831-8742
 - To schedule surgery: 952-977-3414
 - Fax employer or insurance related paperwork ASAP to 952-977-3459.

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