

Orthopaedics & Instruments

By Krysta Mino- Biomet Sales Representative

What is Orthopaedics?

- It is the study of the musculoskeletal system which involves the bones, joints, ligaments and tendons, muscles and nerves.
- Orthopaedic doctors, specialize in the diagnosis and treatment of musculoskeletal system problems under the associated medical fields of Orthopedics or Orthopaedics.



Fields of Orthopaedics

- Hand surgery
- Shoulder and elbow surgery
- Total joint reconstruction (arthroplasty)
- Pediatric orthopedics
- Foot and ankle surgery
- Spine surgery
- Musculoskeletal oncology
- Surgical sports medicine
- Orthopaedic trauma



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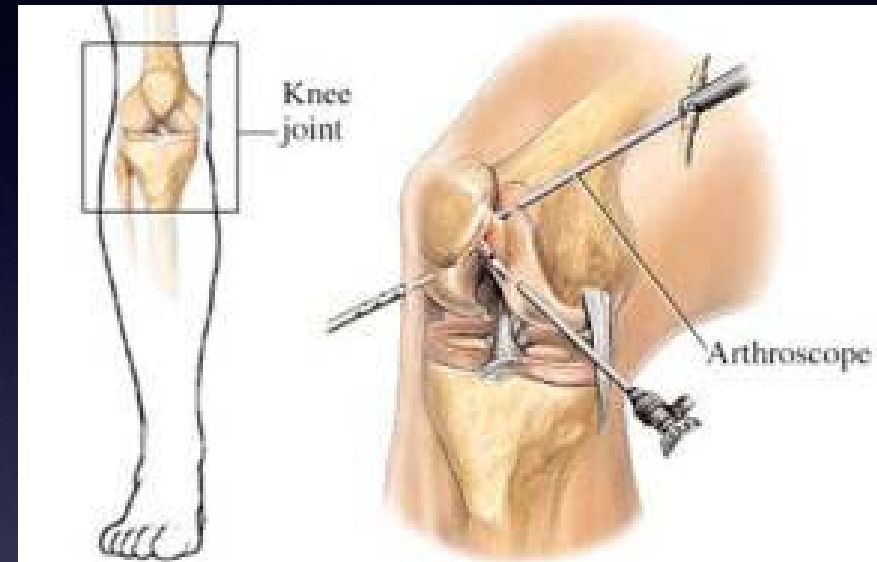
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Orthopaedic Surgery

- **Reconstructive Surgery** -The use of surgery to restore the form and function of the body.
- Joint implants is the field of orthopaedics that is most popular. Large joint replacements such as knee replacements, hip replacement and implants for smaller joints such as the elbows, ankles, wrists and fingers.
- **Arthroscopic Surgery** - a minimally invasive procedure orthopaedic surgeons use to visualize, diagnose, and treat problems inside a joint.
- Several diseases and injuries can damage bones, cartilage, ligaments, tendons and muscles.
- Some common occurring conditions that could be treated/diagnosed with arthroscopic surgery include:
 - **Inflammation,**
 - **Acute or chronic injury,**
 - **Rotator cuff tears,**
 - **Knee damage (soft tissue damage)**



<http://www.massgeneral.org/ortho/assets/images/pediatrics/arthroscopy-damo-1.jpg>



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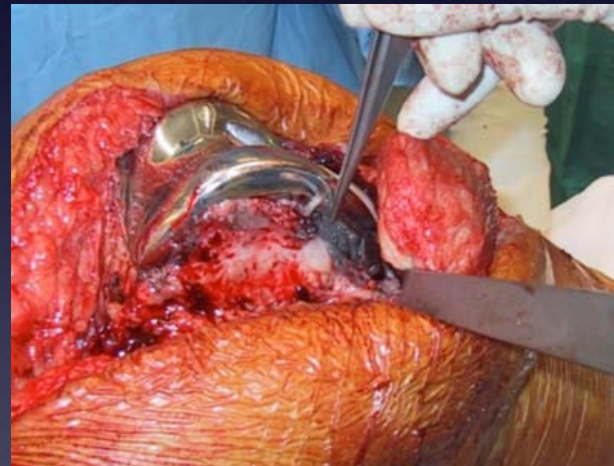
BIOMET IMPLANTS

What are we using all that equipment for???

Why is proper cleaning and sterilization important for total joint replacements?



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-“Periprosthetic joint infection is a devastating complication and is one of the leading causes of morbidity following total joint arthroplasty”.

-“The average rate of periprosthetic joint infection within two years after primary hip or knee replacement is between 0.25% and 2.0%”

Journal of Bone & Joint Surgery, Wadih Y. Matar et al. 2010

THE JOURNAL OF BONE & JOINT SURGERY

Preventing Infection in Total Joint Arthroplasty

Wadih Y. Matar, S. Mehdi Jafari, Camilo Restrepo, Matthew Austin, James J. Purtill and Javad Parvizi *J Bone Joint Surg Am.* 2010;92:36-46. doi:10.2106/JBJS.J.010

- “Recent projections have forecast that by the year 2030 the number of primary total knee arthroplasty procedures will increase to 3.48 million, an increase of 673% compared with 2005”.
- “The number of primary total hip arthroplasties will increase by 174% to 572,000, with the expectant result being that over 4 million primary total joint arthroplasties will be performed in the United States annually”.
- “Similarly, the number of arthroplasty revision procedures is projected to increase correspondingly”.
- “Hence, a tremendous psychological and financial burden is placed on the patient and the health-care system, with the cost of treatment of each episode of periprosthetic joint infection estimated to be three to four times the cost of a primary total joint arthroplasty”.

Lets work together to prevent infection.....

Story of John Harrison...



- In 2009, John Harrison, a 63-year-old oil industry sales manager in Mission, Texas, had surgery to repair the rotator cuff in his right shoulder.
- In the weeks following the surgery, his scar turned bright red, hot to the touch, and oozed thick fluid
- That night, surgeons opened up Harrison's shoulder and found that infection had eaten away part of his shoulder bone and rotator cuff. Screws and metal hardware surgeons placed in his shoulder had pulled loose. Sutures had come undone. Surgeons cleaned out Harrison's shoulder, installed two drains and gave him antibiotics to battle the infection.
- Since then, what began as a simple operation has turned into a lengthy struggle that left him for months at a time dependent on hired nurses, unable to dress himself, take a shower, or work, and afraid for his life.
- Centers for Disease Control and Prevention (CDC) investigators searched for the cause. They found two likely sources in unlikely, yet terrifying, spots — deep inside a hand-held power tool called an arthroscopic shaver, which surgeons use to shave away bone and tissue during surgery, and inside a long narrow metal tube called an inflow/outflow cannula, which is used to irrigate and suction the surgical site.
- The hospital inspected surgical tools with a tiny video camera to make sure places impossible to see with the naked eye were clean. They were not. Inside the cannulas and arthroscopic shavers, the video camera made startling finds. Human tissue and bone were stuck in both devices.

Contributing factors considered...

- At an FDA workshop, experts pointed to several reasons this could be occurring:
- Including the proliferation of highly complex surgical instruments,
- Inadequate device testing by manufacturers,
- The struggle faced by hospital employees who clean and sterilize devices between procedures, often under pressure from nurses and surgeons who need the devices quickly for the next operation.

Cleaning

- Rinsing of instruments:
- Should be done immediately after use. Waiting to rinse orthopaedic instruments for any protracted length of time is not best practice, and may violate hospital or institutional protocol and can even cause instrument damage.
- Blood, tissue and other foreign deposits can in some cases actively deteriorate instruments, and it's important that any such foreign substance be rinsed away as quickly as possible.



Cleaning con't

- Ultrasonic cleaning systems,
- Automatic washer sterilization systems,
- Conventional manual cleaning and soaking, and any other cleaning procedures put in place by your institution.
- For manual cleaning, there are a number of considerations to keep in mind. Be sure to use only gentle plastic brushes where possible, as wire and steel brushes can damage an instrument's protective coating.
- For similar reasons, hand wash only in pH neutral detergents: Acidic detergents can also damage protective coatings of orthopaedic instruments, while alkaline detergents can cause formation of undesired deposits.

Sterilization

- Before use in an autoclave, all metal joints and contact points should be properly lubricated with an appropriate lubricant.
- All locking devices should be unlocked, as locked devices can prevent steam from reaching contaminated areas of the instrument and locked joints can be damaged by heat expansion while using an autoclave.



Important reminders...

- Despite pressure from the Operating Room for quicker turnovers and reprocessing of STAT equipment for overbooked cases, remember to take the adequate time to do it right. The patients safety starts with YOU.
- Always follow manufacturing instructions and directions on equipment.
- Seek out your representatives (we are here to help you and answer questions). If we don't know the answer right away we have the resources to find it for you.

Orthopaedic surgery can be very hard on equipment...

Always keep an eye open for damaged equipment.

- Cracks
- Chips
- Missing pieces/screws
- Loose items



Thank you!

Questions??

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- http://www.hipandkneespecialist.com/total_hip_nourbash_1c.jpg<http://>
- http://www.bjjee.com/wp-content/uploads/2013/12/Operation_20closeup1-668x5011.jpg
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- Journal of Bone & Joint Surgery, Wadih Y. Matar et al. 2010The Centre for Public
- Integrity; How dirty medical devices expose patients to infection, Joe Eaton, 2012