Total Ankle Replacement
Pre - Operative Package

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Introduction

Total Ankle Arthroplasty (TAA) or Replacement is a surgical treatment for end-stage ankle arthritis designed to improve pain and function. Patients receiving a TAA will not be pain free and have normal function. For the patient to obtain the maximum benefit, it is important that they fully understand the ankle anatomy, reason for surgery, surgical procedure and rehabilitation process. This booklet will provide all necessary information to allow the patient to make an educated and thorough recovery from surgery.

Ankle Anatomy

The hindfoot has two joints; the **ankle joint** and the subtalar joint (Figure 1)**.** The ankle joint is composed of 3 bones, the **tibia** which forms the superior and medial, portion of the ankle; the **fibula** which forms the lateral, and the **talus** which forms the inferior portion of the ankle joint. The ankle joint is responsible for up and down motion of the foot.

Beneath the ankle joint is the second part of the ankle, the subtalar joint, which consists of the **talus** on top and **calcaneus** on the bottom. The subtalar joint allows side to side motion of the hindfoot foot. A TAA does not involve the subtalar joint.

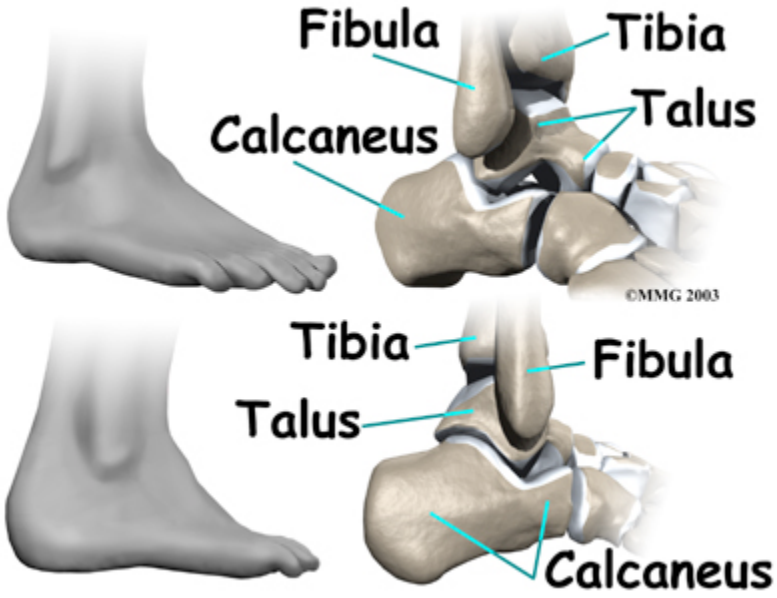

Figure 1

The ends of the bones in these joints are covered by **articular cartilage**. The articular cartilage provides a cushioned surface for the bones of the ankle joint to slide by each other during foot up and down movement. There are many major ligaments of the ankle which connect the tibia to the fibula on the front of the ankle, the fibula to the calcaneus on the outside of the ankle and the tibia to the talus and calcaneus on the inside of the ankle. These ligaments provide stability to the ankle.

Ankle Osteoarthritis

Osteoarthritis is a condition characterized by the breakdown and eventual loss of cartilage in one or more joints. When cartilage deteriorates or is lost, symptoms of pain and decreased motion develop that can restrict one's ability to easily perform daily activities.

Osteoarthritis of the ankle is usually considered a type of ***degenerative arthritis***, or wear-and-tear arthritis and can often occur with increased age or after an old injury in which the cartilage was damaged.

Symptoms of Ankle Arthritis

Ankle arthritis most commonly causes pain around the joint, and the most frequent reason for patients to seek treatment is the pain associated with this condition. Other common symptoms of ankle arthritis include:

- Stiffness of the ankle
- Swelling around the joint
- Bone spurs causing a lumpy appearing joint
- Deformity of the joint
- Instability, or a feeling the joint may "give out"

Less commonly, ankle arthritis can lead to irritation of the nerves around the joint causing tingling and numbness in the feet and toes.

Surgical Procedure

When a patient receives a TAA the articular cartilage between the talus and tibia is replaced with metal (e.g. Cobalt chrome) and plastic (poly ethylene) (Figure 2). This is done while the patient receives an anaesthetic. The anaesthetic may be local, spinal, general or a combination of these. The anaesthesiologists will assist the patient in making a decision of which type of anaesthetic is most appropriate.

Once the patient is anesthetised the TAA procedure is performed by making an incision in the front of the ankle joint. The soft tissues are then moved off to the side and the inferior portion of the Tibia is resurfaced with a metal tibial component and the superior portion of the talus is resurfaced with the metal talar component. The space between these surfaces is then filled with a highly polished plastic spacer that allows the tibia and talus to slide past each other during up and down foot movement (Figure 2). After the TAA is completed the incision is closed with stitches or staples and a large bulky cast is placed below the knee over the entire foot to protect the surgical site during healing. This patient will not be allowed to bear weight on the foot for at least 4 weeks and usually 6 weeks.

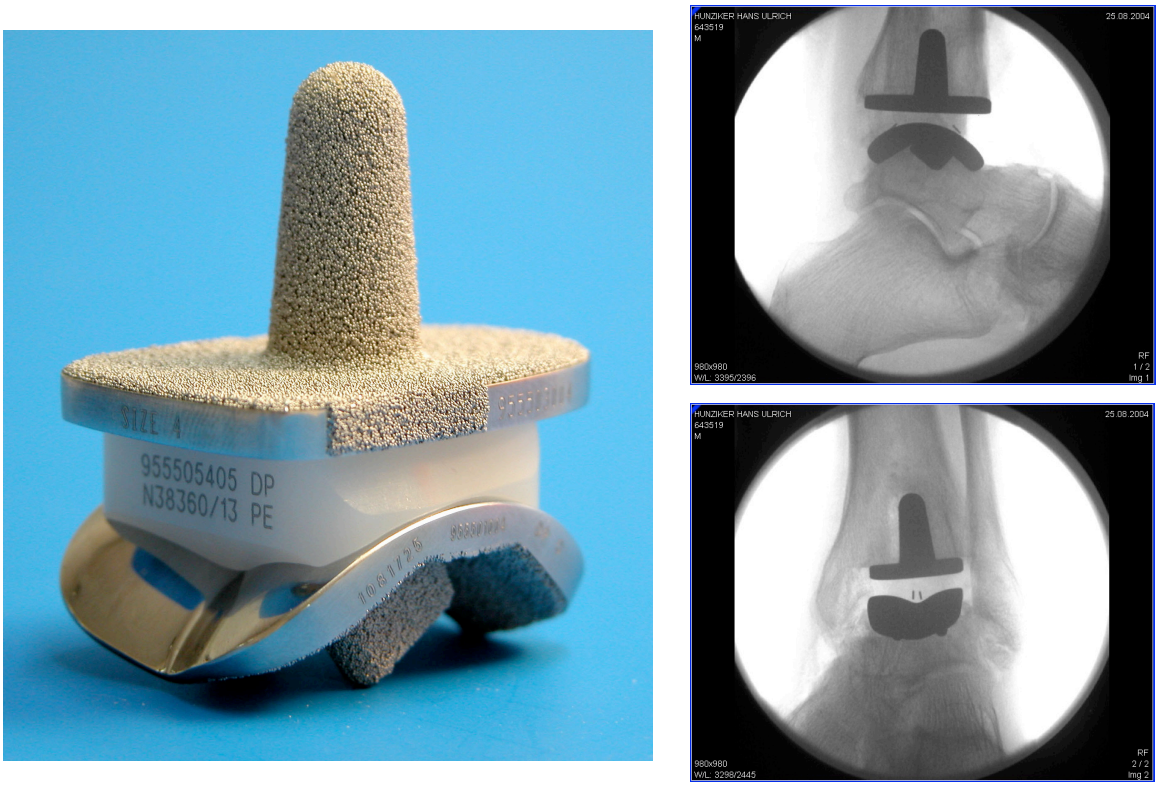

Figure 2

The patients will then spend a short period in the recovery room where the anaesthetic will begin to wear off and the patient will then be admitted to the orthopaedic floor for a

variable period of 1 to 5 overnight stays depending on the health status and pain control of the patient.

After discharge home patients will remain non weight bearing for the prescribed period and return to the orthopaedic outpatient clinic on the 4th floor at the new Halifax Infirmary QEII Health Sciences Center between 7 and 14 days after surgery. During this visit patients will receive an x-ray, cast change and wound inspection to be sure there are no problems. This is also the time that Dr. Glazebrook can explain any unanswered questions regarding the surgery. The next clinic visit usually occurs 4-6 weeks after the surgery where the cast is removed the wounds inspected and another x-ray is taken. The patient is then prescribed some physical therapy which actually begins prior to surgery (See Below) and the physical therapist will guide the patient through the rehabilitation process.

The next clinic visits will occur 3, 6, and every 12 months after the operation. Patients are encouraged to call Dr. Glazebrook's office (902 473 7137) at any time if they are experiencing problems and will then likely be advised to return to the hospital for argent assessment.

Rehabilitation Process

Rehabilitation following ankle replacement surgery should begin prior to the surgery with the education of the client and proper preparation to ensure that everything is in place for a successful rehabilitation process.

Important things to consider:

- You will be encouraged to attend a Pre-operative Physiotherapy appointment. This will consist of a session in which the physiotherapist will educate you on the surgical procedure and the rehabilitation process.
- Prior to the surgery you will also be fitted with a walking cast called a boot walker (Figure 3). This specific type of ankle brace will be required to be worn for the first 6-8 weeks post surgery.
- You will be non-weight bearing for the first 6 weeks so you will require crutches, walker or wheelchair for mobility.
- Once the cast is removed you will also be advised on the use of medical grade compression stockings to aid in the control of swelling. These stockings can be worn immediately after cast is removed once you are into the boot walker. It is advisable to have 2-4 pairs for washing purposes.

Cast Boot/ Boot Walker

Figure 3

The cast boot is designed to immobilize the foot and ankle and lower leg while allowing safe ambulation. The reinforced nylon shell provides maximum rigidity while the wrap around liner with Velcro straps provides comfort. There is a large rocker bottom for improved weight transfer during gait.

Post Operative Protocol

The following protocol has been developed for the post – operative rehabilitation of the Total Ankle Arthroplasty patient.

This protocol is initiated following the removal of the cast which usually occurs at the 6 week mark.

Weeks Post Op

Week 1-6 Non Weight Bearing

General Considerations

- After the surgery the compression bandages will be removed and you will be placed in a cast. The cast will be changed at the 7-14 day post-op visit and stitches are removed.
- You will be in the cast for 1-4 or 6 weeks, non-weight bearing.
- Elevate the foot as much as possible especially in the first week.
- You will return to the orthopaedic clinic for your follow-up appointment 3 weeks post surgery. Further follow-up appointments will be done at week 4-6, 12 and 1 year, 2 Year.
- At the 4-6 week post-op appointment the cast is removed and you will be placed in the Boot Walker. Please bring this to your appointment with you. You will be then able to start weight bearing in a gradual fashion. Occasionally a Boot Walker maybe worn 2 weeks prior to initiating weight bearing to facilitate early range of motion.

Week 6-10 Progressive Weight Bearing in Boot Walker (may not start till week 8)

Recommended Weight Bearing

Week 6	0-25%
Week 7	25-50%
Week 8	50-75%
Week 9	75-100%

Rehab Goals

- Reduce swelling
- Increase ROM
- Prevent Soft tissue adhesions
- Maintain hip/knee muscle strength; flexibility
- Initiate ankle and foot range of motion exercises.
- Pain Management

Treatment

- Gait re-education as tolerated.
- Electrotherapy/modalities
    - IFC, Light /laser therapy/ acupuncture, ice
    - Ice/Contrast Baths as needed. Careful with diabetic feet, i.e. heat.
- Effleurage massage, scar tissue management (frictions, Vitamin E education), myofascial release of gastrochnemius muscle.
- Compressive stocking for swelling
- Passive joint mobilizations as needed.
- Active Exercises
    - Ankle PF, DF, inversion, eversion, circles, alphabets
    - Seated wobble board active ROM (unidirectional – dorsiflexion and plantar flexion only)
    - ball rolling against wall and in sitting
    - Seated DF stretch with strap
    - Prone hip extension, sidelye hip abduction, bridging
    - Quads setting over roll, isometric hamstring.
    - Stretches – lower extremity muscle groups
    - Core exercises in lying, ball sitting
- Bike with boot on if tolerated
- Wear compression stockings as tolerated to decrease swelling.

Week 10-12

Rehab Goals

- Improve range of motion and strength in ankle and leg
- Initiate proprioceptive retraining exercises as tolerated.
- Gait re-education

Treatment

- Electrotherapy/modalities as needed
- Passive joint mobilizations as needed.
- Continue to wear compression stockings to control swelling as needed.
- Active Exercises
    - Week 8-10 exercises continued
    - Resisted Theraband exercises for inversion, eversion, plantar flexion and dorsiflexion in sitting or standing
    - Seated wobble board active ROM (unidirectional – dorsiflexion and plantar flexion only)
    - Weight bearing/closed kinetic chain toe raises – start on shuttle and progress to standing with support and than unsupported
    - Gait re-education with cane
    - Stationary bicycle no resistance, possibly only arcs, progress to mild resistance as tolerated

- Progress quadriceps strengthening as appropriate with leg press, shuttle, and wall squats (1/4 squat only) etc.
- Balance activities/walking on different surfaces as tolerated
- Core exercises progressed as tolerated
- Hamstring strengthening – standing leg curls with wall cables

Week 12 on

- Electrical modalities as needed for pain and swelling control.
- FWB gait re-education
- Continue with exercises as above, progressing range of motion
- Seated wobble board active ROM (unidirectional – dorsiflexion and plantar flexion only)
- Walking program on treadmill
- Increased stationary cycling
- Continue to wear compression stockings to control swelling as needed.

Expected Outcomes

The below expected outcomes usually occur at approximately 3-6 months but sometimes up to 1 year.

- Improvement in most of your ankle pain but usually not all.
- Walking with or without a gait aide
- Swelling with associated aching will occur with increased activity may still be present for up to 1 year
- Expected range of ankle motion varies and is dependent on the pre-operative range of ankle motion.

Return to Activities

- Expected
  - walking/swimming/cycling/golfing
  - minimal stress on ankle

- Avoid
  - Contact sports/step aerobics
  - Stop/go motions (e.g. basketball)

Pre-Operative Total Ankle Arthroplasty Assessment Sheet

(To be completed by physiotherapist during pre-operative visit and taken to physiotherapist doing post- operative rehabilitation.)

Observations

_____
_____
_____
_____

Range of Motion

Active	DF	_____	Passive	DF	_____
	PF	_____		PF	_____
	Inver.	_____		Inver.	_____
	Ever.	_____		Ever.	_____

Functional Status

Gait _____
_____

Stairs _____
_____

Uneven Surfaces
_____
_____

Date _____
Physiotherapist _____
Telephone Number _____