Clinical Pearls

Traction Arc: Anatomical Positioning on the Orthopedic Trauma Top System

Spinal Surgery Tables

MIZUHO | OSI®
Spinal Surgery Tables

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The Orthopedic Trauma Table Top can be used in conjunction with the Mizuho OSI Modular Advanced Control Base (5803) and the Trios® Table Base (7803). This configuration is referred to as the Orthopedic Trauma System (OTS). The use of the unique Traction Arc provides for anatomically correct lower extremity skin or skeletal traction for patient positions during orthopedic trauma procedures.

See the setups section for the associated Orthopedic Trauma Table applicable procedures.

Note: This document is intended to be used in conjunction with the Table Owner’s Manual to provide additional photographic detail and descriptions of the recommended orthopedic table setups and basic patient positioning contained within the manual.
What is reduction?

Reduction is the action of restoring a dislocation or fracture by returning the affected part of the body to its normal position.

Fractures are reduced “perfectly” to restore the bony anatomy and the relationship between the proximal and distal main fragments, setting the scene for recovery of the function of the limb. Reduction maneuvers are performed under fluoroscopic imagining and before the patient is prepped and draped.

Anatomical reduction:
- “Perfect” restoration of bone morphology

Functional reduction:
- Length
- Alignment
- Rotation

Setup for Skeleton Traction and Skin Traction

The OTS, with the Traction Arc, is used to facilitate the reduction of certain fractures. The OTS is used for anatomical positioning and reduction of lower extremity fractures, such as proximal hip fractures. It is used to assist with intraoperative positioning, including the following:

- Anatomic reduction for flexion/extension
- Correcting for varus/valgus angulation
- Internal/external rotation of the femur
- Maneuvering for anatomic position

The Anatomical Adjustment Roller allows the surgeon to move the reduced fracture to accommodate the insertion of a femoral nail or plate.

The OTS may be set for 2 types of skeletal traction:

Bilateral Skeletal and Skin Traction

Unilateral Skeletal Traction
Step 1: Varus/valgus alignment and gross traction reduction movement

The Traction Arc can maintain varus or valgus alignment of the fracture site. This is accomplished by abducting or adducting the leg with the Tractor on the Traction Arc. This movement realigns the fracture site. The Traction Arc may also be adjusted depending on the amount of abduction or adduction needed for the reduction.

If the fracture has lost length, gross traction is applied on the Traction Extension and locked into position with the Traction Extension Lock. The Traction Unit Crank Handle is used for fine traction.

Anatomical Adjustment Roller

The Anatomical Adjustment Roller of the Traction Arc allows for anatomical positioning. This maneuver is used after the correction of extension/fixation, varus/valgus angulation, and internal/external rotation of the femur. These are considered gross movements used to obtain reduction. The Anatomical Adjustment Roller provides fine movements and allows the surgeon to move the reduction back to the desired anatomical position. This assists with allowing ease of femoral nail insertion or plate fixation.

Photo Key:

- Red arrows illustrate the internal/external rotation of the femur
- Yellow line illustrates the position of the femur from the proximal to distal aspect in relation to the torso
- Blue circles are components of the Traction Arc that adjust for height and gross/fine traction

Varus / Valgus Alignment
**Step 2: Flexion/extension reduction movement**

If the reduction of the fracture requires flexion/extension, this is accomplished with the Traction Unit Upright and the Traction Extension. The Traction Unit Upright is secured into the Tractor. The Traction Unit Height Adjustment Crank Hand raises and lowers the Traction Unit Upright. This allows the surgeon to realign the femoral shaft to the proper position and better manage posterior sag or anterior translation.

**Step 3: Rotational correction of the fracture**

If the fracture is off rotationally, one may use the Traction Foot Plate with the Soft Traction Boot or the Traction Boot. Alternatively, one can use skeletal traction devices that attach to the Traction Unit. All of these devices have a blue handle that, when unlocked, allows for internal and external rotation of the extremity. This allows the femur to be rotated into position, with the patella properly positioned, permitting tension of the underlying tissues to be restored to their natural state.
Step 4: The Anatomical Positioning movement

In Steps 1-3, the surgeon has attained these corrections of length, alignment, rotation, and position through gross movements. With these corrections, the greater trochanter is positioned medially causing some difficulty with femoral nail insertion or plate fixation.

In Step 4, using the Anatomical Adjustment Roller allows one to position the femur lateral. This permits the surgeon to move the reduction to the proper anatomic alignment without disrupting any of the reduction maneuvers. This allows for ease of femoral nail insertion or plate fixation.
Applicable Procedures

- Hip Pinning: Unilateral Skin Traction
- IM Femoral Nailing: Lateral Decubitus Position Unilateral Skeletal Traction
- IM Tibial Nailing: Using Radiolucent Auxiliary Leg Spar with Traction Boot
- Hip Pinning: Bilateral Skin Traction
- IM Femoral Nailing: Lateral Decubitus Position Bilateral Skin Traction
- IM Tibial Nailing: Using Radiolucent Auxiliary Leg Spar with Tibia Well Leg Support
- IM Femoral Nailing: Supine Unilateral Skeletal Traction
- IM Femoral Nailing: Lateral Decubitus Position Unilateral Skin Traction
- IM Tibial Nailing: Using Well Leg Support
- IM Femoral Nailing: Supine Bilateral Traction Skeletal and Skin
The **Trios Surgical Table System** brings enhanced functionality to the original spinal platform used worldwide. Built with superior quality and safety in mind, the Trios system is fully radiolucent, with a modular design that enables patient positioning for a wide variety of spine, imaging, and orthopedic procedures. Trios brings a new confidence and control to a system created with the needs of both the user and patient in mind.

**Modular Table System**

The **Modular Table System** is designed to provide health care facilities flexibility in responding to changing surgical services and shifts in case loads or specialties. Accommodating three interchangeable surgical table tops, the system’s reliable technology and ergonomic, multi-functional interchangeable modular tops are fully radiolucent, fitted with custom Tempur-Pedic® support pads to enhance patient positioning.

For product information contact your Mizuho OSI sales representative or call 1-800-777-4674.