The Montague-Iliff Maneuver: A Simple Supine Suspension Positioning Technique for Olecranon Fracture Open Reduction Internal Fixation

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Learning Point of the Article:

The Montague-Iliff Maneuver suspends the flexed arm with two sterile Kerlix slings, enabling supine posterior olecranon exposure while preserving airway access and reducing reliance on dedicated positioning equipment.

Abstract

Introduction: Posterior approaches for olecranon fracture fixation are traditionally performed in the prone or lateral decubitus position. While these positions provide direct access to the posterior elbow, they may introduce anesthetic challenges, logistical inefficiencies, and risks in polytrauma patients. Supine positioning offers anesthetic and ergonomic advantages but often requires assistants or cumbersome supports to maintain elbow flexion during exposure. We describe a simple, reproducible supine positioning technique – the Montague-Iliff Maneuver – that provides stable posterior elbow access without additional equipment or personnel.

Technique: The patient is positioned supine. The operative extremity is flexed to 90° at the shoulder and elbow with approximately 90° of internal rotation. Sterile Kerlix is fastened circumferentially around the wrist and extended across the operative field, passed over IV poles on the contralateral side, and tensioned by anesthesia to suspend the arm above the patient's chest.

Conclusion: The Montague-Iliff Maneuver provides a safe, efficient, and cost and time-effective alternative to prone or lateral positioning for posterior olecranon fixation. It facilitates anesthetic access, improves operative ergonomics, and eliminates the need for additional positioning devices or assistants.

Keywords: Olecranon fracture, posterior elbow approach, supine positioning, surgical technique, operative ergonomics.

Introduction

Displaced olecranon fractures frequently require open reduction and internal fixation through a posterior midline approach. Traditional positioning for posterior elbow exposure involves prone or lateral decubitus placement to allow gravity-assisted elbow flexion and direct posterior access [1]. Positioning a patient in the lateral decubitus can be cumbersome and time intensive, and an assistant is often needed to maintain elbow flexion. Polytrauma can further complicate placing patients into the lateral decubitus position, and airway access may be complicated by this positioning [2].

Supine positioning has the benefit of being generally easier to set up with improved airway access for anesthesia control. The primary limitation of supine positioning for posterior elbow surgery is maintaining stable elbow flexion and posterior exposure without an assistant or bulky positioning equipment. Wijeratna et al. [3], Metikala et al. [4], Patel et al. [5], Sandrowski [6], and others have described different variations of supine

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Author's Photo Gallery


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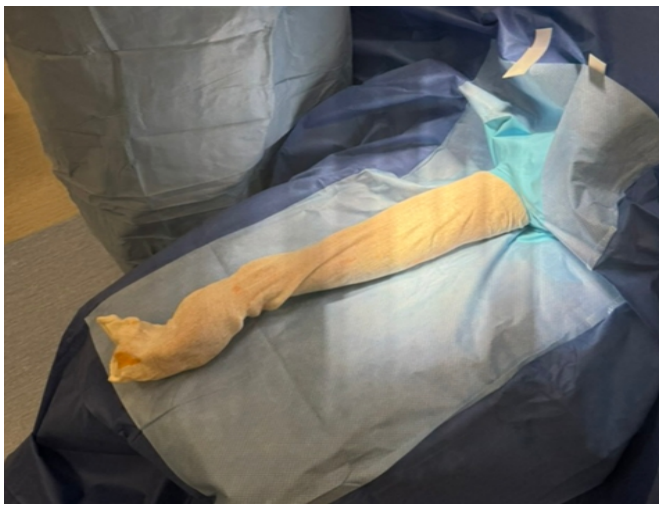


Figure 1: The operative arm that has been prepped and draped and placed on an arm board.



Figure 2: The surgeon adjusting the stockinette and wrapping the ipsilateral hand and wrist in Coban.

positioning for posterior elbow access.

We describe a simple, low-cost suspension technique – the Montague–Iliff Maneuver – that allows reproducible posterior access in the supine position using sterile Kerlix and IV poles.

Surgical Technique

Supplies needed

- IV poles x2
- Non-sterile weights, ~ 20 lbs. (i.e., bean bags or traction weights)
- Sterile Kerlix x2
- Sterile Coban
- Hemostat x2

Patient positioning

The patient is placed supine on a standard operating table. A bump may be placed under the ipsilateral scapula to facilitate shoulder positioning if needed.

Approximately 10 lbs of weights are placed at the base of each IV pole. These counterweights prevent IV pole instability during the procedure. One IV pole is positioned toward the head of the contralateral side of the patient while the other IV pole is positioned toward the patient's feet still on the contralateral side.

The operative extremity is prepared and draped in standard sterile fashion with a stockinette over the operative arm and either held by an assistant or placed on an arm board at the side



Figure 3: The operative extremity suspended by 2 Kerlix dressings as seen from a lateral view.



Figure 4: Anesthesia ties off the distal end of each Kerlix behind the sterile field with appropriate tension.

of the bed (Fig. 1). After exsanguination and inflation of the tourniquet, the stockinette is cut circumferentially just below the drape and rolled down to the distal 1/3rd of the forearm, securely wrapping the hand and wrist with Coban dressing (Fig. 2). The shoulder is then positioned in 90° forward flexion and approximately 90° internal rotation. The elbow is flexed to 90°, bringing the olecranon superiorly and exposing the posterior proximal ulna. The extremity is held in this position until arm suspension is achieved.

Arm suspension

A 4" sterile Kerlix is fastened with a hemostat around the patient's wrist over the Coban-wrapped stockinette. The opposite end of the Kerlix is then passed off the operative field toward the contralateral side. The now unsterile free end of the Kerlix is placed over a wrung on an IV pole which is positioned toward the head of the patient opposite to the operative side. The anesthesiologist or other assistant applies gentle tension and secures the non-sterile end of the Kerlix to the bed rail to maintain suspension of the operative arm.

A second sterile Kerlix is fastened in similar fashion to the first on the patient's operative wrist and the free end of this second Kerlix is thrown over a second IV pole positioned toward the foot of the patient opposite to the operative extremity and tied down again by anesthesia or an assistant (Figs. 3 and 4).

The triangulation of the two Kerlix to suspend the arm creates stable positioning of the arm with maintained elbow flexion without requiring a surgical assistant to hold the limb for the duration of the case. The amount of tension can be adjusted intraoperatively with the hemostats to optimize exposure while avoiding excessive traction. The arm board may be removed after the arm has been suspended.

Discussion

Several techniques have been described in an effort to improve posterior elbow access in the supine position for displaced olecranon fracture repairs. Wijeratna et al. (2013) first reported a supine arm-over-chest method for open elbow surgery: The arm is supported on the chest by a Lloyd-Davies leg support (or padded L-bar) attached to the table, with a rolled towel under the ipsilateral shoulder to elevate it [3]. Metikala et al. described a supine forearm-flexed technique specifically for olecranon fractures [4]. In their method, the patient lies supine with the arm on an arm table; a saline bag and radiolucent triangle support the humerus while the elbow is flexed over a sterile bolster on the chest. They secure the arm with bolsters to prevent sliding. Patel et al. (Ann R Coll Surg 2019) also described a supine variant for tension-band wiring: the arm lies over an arm board, shoulder abducted, and externally rotated 90°, with the elbow resting on a kidney dish [5]. Sandrowski describes yet another technique: The arm is placed supine hanging slightly over the table edge, supported by two cylindrical rollers forming a "V" cradle under the arm, with Esmarch wraps securing it [6].

The Montague-Iliff Maneuver addresses several limitations of traditional posterior positioning techniques [7]. It has the advantage of being simple and reproducible and uses almost universally available materials. It is cost effective and the patient can be positioned very quickly. Potential limitations of the maneuver include the fact that the anesthesiologist or other assistant must help in fastening the far end of the Kerlix. The surgeon may also need to familiarize himself with the orientation of the elbow in this position [8, 9]. Care must be taken to avoid excessive traction to avoid displacement of the IV pole and subsequent sterile field contamination. Care must also be taken to ensure that there is adequate padding beneath the wrist where the Coban is tied to it. Reduced maneuverability of the patient's shoulder may also present challenges to using this positioning technique [10].

In our experience, the technique provides stable exposure without traction-related complications when properly tensioned, and excellent access to the posterior elbow which can be attained in 3 min or less after sterile draping has been applied.

Conclusion

The Montague-Iliff Maneuver is a safe, cost-effective, and reproducible supine positioning technique for posterior olecranon fracture fixation. It provides stable elbow flexion and posterior exposure without the need for prone or lateral positioning, specialized equipment, or dedicated assistants. Further evaluation in larger clinical series may help validate its reproducibility and outcomes.

Clinical Message

For selected patients undergoing posterior olecranon fixation, the Montague-Iliff Maneuver offers a practical supine option for maintaining elbow flexion and posterior exposure, provided the wrist is padded and sling tension is carefully controlled.

Declaration of patient consent: The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given the consent for his/ her images and other clinical information to be reported in the journal. The patient understands that his/ her names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Conflict of interest: Nil **Source of support:** None

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