CASE REPORT

Postorolateral rotatory instability of the elbow—A new use for the sugar tong cast

M.E. Kent*, D.J. Brown, P. Brownson

Royal Liverpool University Hospital, Upper Limb Unit, United Kingdom

Accepted 3 January 2006

Introduction

A sugar tong cast is an effective, comfortable and cheap alternative to commercially available hinge braces in the treatment of postorolateral instability of the elbow. Its use and application is described.

Posterolateral instability of the elbow—pathology and diagnosis

Posterolateral rotatory instability of the elbow was first described by O’Driscoll. It is described as the first stage in the spectrum of elbow instability. It is usually caused by a traumatic fall onto the outstretched hand and may be associated with a dislocation of the radiohumeral or elbow joint. It can occur in isolation or with a concomitant bony injury, usually a radial head fracture.

It is thought to relate to injury with laxity or rupture of the ulnar part of the lateral collateral ligament. This allows a transient rotatory subluxation of the ulnohumeral joint and a secondary dislocation of the radiohumeral joint. The annular ligament remains intact so the radio-ulnar joint does not dislocate.

Patients will often describe a feeling of instability with pain and occasionally clunking on movement. Posterolateral instability of the elbow is notoriously difficult to diagnose due to it often having no obvious clinical or radiological signs. O’Driscoll described a posterolateral rotatory instability test which is similar in principle to the pivot shift test of the knee. It is performed by supinating the forearm, applying a valgus moment with axial compression whilst flexing the elbow from full extension. The test is positive if a palpable clunk is felt as the elbow reduces at approximately 40° of flexion. This test can be performed in clinic but is most sensitive under general anesthetic. MRI is a useful examination as it can demonstrate rupture or inflammation within the lateral collateral ligament complex.

Patients often present with a chronic or neglected problem with the elbow. In this instance surgical reconstruction of the lateral collateral ligament complex is recommended. However if the condition is diagnosed acutely current literature recommends the use of a hinged brace holding the forearm pronated and blocking extension at 30°. This prevents further subluxation whilst the lateral collateral ligaments recover.

Hypothesis and methods

The use of a commercially available hinged elbow brace is traditionally recommended. These are
usually expensive and have to be ordered individually leading to potential delays in treatment. Patients find the braces cumbersome and as such they are often poorly tolerated.

**Hypothesis.** It was hypothesised that a simple sugar tong cast would provide adequate stabilization and as such might represent a cheap and readily available alternative to the commercially made hinged brace.

Three consecutive patients with posterolateral rotatory instability have been treated using only a sugar tong cast for a total period of between 6 and 8 weeks.

**Results**

The sugar tong cast was cheap and easy to apply. It provides an adequate block to extension whilst resisting rotation. If made out of a modern, lightweight and synthetic material it can last for the duration of treatment. These casts are much less bulky and have excellent patient acceptability. We have now successfully completed the treatment of three elbows with posterolateral rotatory instability using the sugar tong cast. We have found high levels

![Figure 1](image1) Measure from MCP joint around the elbow and back to the MCP joint on the opposite side of the hand.

![Figure 2](image2) Prepare the tubinet and softban base layers making sure this extends just above the elbow.

![Figure 3](image3) Measure the cast (POP or synthetic) to the length measured earlier. Make a cut 5 cm either side of the midpoint and fold over the flap to make a bar.

![Figure 4](image4) Apply the cast making sure the bar sits above the olecranon and for this indication the forearm is fully pronated. However, the forearm can be held in any degree of rotation desired.

![Figure 5](image5) Wrap with bandage and allow to set in the position decided in step 4.

![Figure 6](image6) This demonstrates that the forearm is held fully pronated and cannot extend further than shown here.
of patient comfort and tolerance with no complications. All elbows resolved completely. All elbows have had no recurrence of symptoms or need for surgery at follow up of 18 months.

**Application of the sugar tong cast**

Application of the sugar tong cast is based on the ‘sugar tong’ principle and was originally described for use in forearm fractures of the child by JH Stilwell.\(^1\) It can be applied as demonstrated in Figs. 1—7.

The sugar tong cast does allow the forearm to be held in any desired degree of rotation which does increase its versatility. In posterolateral rotatory instability the position has to be pronation.

**Conclusion**

In conclusion we recommend the use of a modified sugar tong cast in the treatment of postero-lateral rotatory instability of the elbow. The cast could also be utilized in any condition of the elbow requiring control of rotation and limitation of extension.

**References**

1. McGeorge DD, Stilwell JH. The sugar tong splint—a reliable method of arm splintage in the child. J Hand Surg 1989; 14(3):357.
2. Nestor BJ, O’Driscoll SW, Morray BF. Ligamentous reconstruction for posterolateral rotatory instability of the elbow. JBJS 1992;74A(8):1235–41.
3. O’Driscoll SW, Bell DF, Morrey BF. Posterolateral rotatory instability of the elbow. JBJS 1991;73A(3):440–6.
4. O’Driscoll SW, Jupiter JB, King GJW, Hotchkiss RN, Morray BF. The unstable elbow—instructional course lecture. JBJS Inst Course Lect 2001;50A:89–102.
5. Smith JP, Savoie FH, Field LD. Posterolateral rotatory instability of the elbow. Clin Sports Med 2001;1:47–58.
6. Yadao MA, Savoie III FH, Field LD. Posterolateral rotatory instability of the elbow. JBJS Inst Course Lect 2004; 53A:607–14.

**Figure 7** This demonstrates the forearm remains pronated but is allowed to flex freely.