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Scapholunate dissociation in a child: A case report with modified extra-osseous reconstruction technique

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Abstract

Introduction: Scapholunate ligament injury is rare in children. Most of the cases occur with concomitant distal radius fractures. Complete scapholunate disruption may present with long term pain and disability.

Case Report: We present a case of scapholunate injury in a youngest patient reported in literature with this injury. The senior author managed the injury with a modified extra-osseous repair with good outcome.

Conclusion: This is rare injury in young carpus and mostly presents as delayed laxity and pain post distal radius fracture. This case report wants treating physician to be aware about this condition. Though there is no consensus regarding the ideal surgical management of such injuries senior author has put forward a modified extra-osseous repair which has given good results in our centre.

Keywords: Scapholunate dissociation, extraosseous, reconstruction technique

Introduction

Scapholunate ligament injury is commonly seen in adults^[6] but in children is rare with only a few published cases of complete scapholunate dissociation^[1-4]. Most of the cases have been reported with concomitant distal radius fractures. Young patients with distal radius fractures are usually treated non-operatively because they have great capacity of healing. Soft tissue injury resulting in laxity may not be a problem in most cases as the joint distance and tension will change with further growth of the structures but in complete scapholunate disruption laxity may present with long term pain and disability. The treatment of such injuries is complex and immature carpus with potential of disruption of the growth has divided the opinion over treatment of such injuries with some advocating conservative^[5] and others surgical management^[1, 2, 4]. There is no consensus regarding the ideal surgical management of such injuries. We report a case of distal radius fracture with delayed presentation of scapholunate dissociation in the youngest patient reported in literature treated by a novel surgical technique with good outcome.

Case report

A 7 year old boy sustained a Salter-Harris type 3 fracture of his right distal radius following a fall on the outstretched hand. He was treated by closed reduction and application of plaster cast for 6 weeks and was discharged with advice of wrist mobilisation exercises. The child continued to have clicking and pain in the wrist for next 2 years and multiple visits to primary care leading to no diagnosis. He was subsequently referred to tertiary care.

On examination there was no tenderness of wrist but restriction of dorsiflexion of wrist by 5 degree and restricted palmarflexion by 60 degree as compared to the other wrist. The scapholunate ballottement on right side was painful. Kirk-Watson test was positive. The new radiographs showed radial shortening by 1cm.

Anteroposterior radiographs of wrist (Figure 1), the scapholunate distance was 5 mm on the injured side measured by Cautilli and Wehbe's method^[7]. This distance was within the normal range for a 9-year-old boy^[8] and did not suggest scapholunate ligament injury. A MR arthrogram was inconclusive and could not visualise the scapholunate ligament but did show irregularity of articular surface of the radiocarpal joint (Figure 2). A diagnostic arthroscopy revealed complete tear of the scapholunate ligament with grade 3 articular surface loss at the radiocarpal joint.

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After discussion of options and in light of significant pain and cartilage changes surgical reconstruction was considered. At this age an intraosseous reconstruction using flexor carpi radialis tendon tunneled through scaphoid was dismissed. A novel extraosseous reconstruction using the dorsal capsule and dorsal radiocarpal ligament was opted. The extensor retinaculum was identified after a dorsal longitudinal incision. A Brunelli capsular flap was raised and part of the radiocarpal ligament running from the Lister's tubercle to the triquetrum was incised at the Lister's tubercle to produce a strip of tissue. This was used as an extraosseous checkrein between the scaphoid and lunate using 2 micromitek anchors one each in the scaphoid and the lunate. This reconstruction was reinforced with the Brunelli capsular flap (Figure 3 and 4). The child was put in a plaster with wrist in slight dorsiflexion and mild radial deviation for 6 weeks. Further review post-operatively the child was noted to have no pain at rest and day to day activities, with full range of dorsiflexion and palmar-flexion. The quick DASH score improved from 52.5 preoperatively to 5 post-operatively (12 months post operatively). There was also a significant improvement of visual analogue pain score from 9 to 2 (pain at its worst). No further problem was reported in post-discharge period and patient reports no problem of wrist. Patient is able to perform all activities in school and sports with no pain or dysfunction (3 years).



Fig 1: Anteroposterior radiographs of wrist did not suggest scapholunate ligament injury.



Fig 2: A MR arthrogram was inconclusive and could not visualise the scapholunate ligament but did show irregularity of articular surface of the radiocarpal joint.

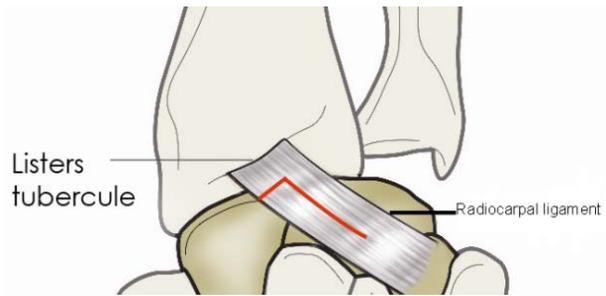


Fig 3: The extensor retinaculum identified was identified and a dorsal longitudinal incision was made.

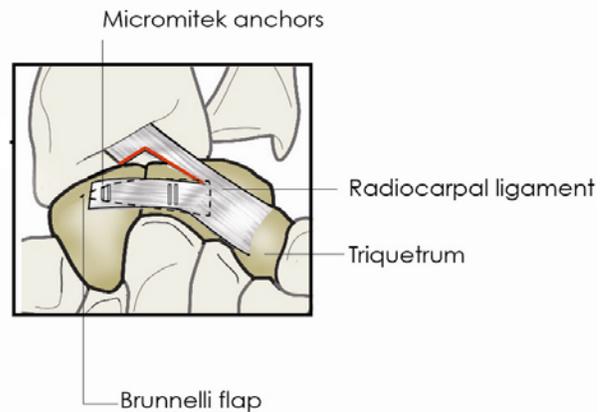


Fig 4: A Brunelli capsular flap was raised and part of the radiocarpal ligament running from the Lister's tubercle to the triquetrum was incised at the Lister's tubercle to produce a strip of tissue. This was used as an extraosseous checkrein between the scaphoid and lunate using 2 micromitek anchors one each in the scaphoid and the lunate. This reconstruction was reinforced with the Brunelli capsular flap.

Discussion

Scapholunate injury represents a wide spectrum from variable instability to complete disruption. Clinicians need to have high degree of suspicion in such cases as most of the X- rays looking fairly normal especially in presence of other pathologies. Wrist arthroscopy is indicated in children with typical clinical findings of scapholunate dissociation even in the absence of radiographic abnormalities [14].

The surgical treatment of scapholunate injury in children varies, previous reports describing scapholunate debridement [5], dorsal capsulodesis [15, 13] and pinning [4] as preferred treatment choices. Scapholunate debridement is used only for grade 1-2 scapholunate ligament injuries their role is limited and unproven in grade 3-4 dissociation [5]. Studies using k-wire pinning as treatment option for scapholunate dissociation has a potential risk of interference with growth and long term follow-up of such patients is not available.

Intrinsic scapholunate ligament is usually represented by only remnant and direct repair is impossible [5]. Dorsal Capsulodesis initially described by Blatt *et al* if used alone acts as a mere reinforcement after repair of intrinsic scapholunate ligament [13]. The durability of this restrain construct is unknown and acts as a mere restrainer of excessive palmar flexion of scaphoid thus maintain scaphoid reduction till growth has completed and then an osseous procedure could be undertaken safely [1].

For reasons given above the senior author used flap of the radiocarpal ligament to reconstruct the scapholunate ligament, which he considered to be stronger than the joint capsule. However the joint capsule Brunelli flap was used to reinforce the reconstruction. This criss cross prevented the scaphoid and

the lunate from separating with an additional purse string suture passed between the medial dorsal radiocarpal ligament flap and brunelli flap as well as the main radiocarpal ligament. This was to further strengthen the criss cross repair and provide additional stability to the scapholunate ligament.

Conclusion

To conclude we need to highlight the presence of this rare injury in young patients so that attending physicians are aware. It is worth reminding again that the presentation after initial injury may be delayed due to age group of population and severity of injury. Plain radiographs may not be useful in diagnosis and author advocates use of arthroscopy in suspicious cases. It is also important to understand that all injuries do not need surgical repair but severity of symptoms and findings during arthroscopy would provide guidance to whether surgical repair is required. We have also described a novel extraosseous scapholunate ligament reconstruction which has yielded good results in our centre.

Conflict of interest

Nil

References

1. Zimmermann NB, Weiland AJ. Scapholunate dissociation in the skeletally immature carpus. *J Hand Surg Am.* 1990; 15A:701-705.
2. Gerard FM. Post-traumatic carpal instability in a young child. *J Bone Joint Surg Am.* 1980; 62A:131-133.
3. Cook PA, Kobus RJ, Wiand W, Yu JS. Scapholunate ligament disruption in a skeletally immature patient: a case report. *J Hand Surg Am.* 1997; 22A:83-85.
4. George El Rassi, Suken A. Shah Dynamic scapholunate dissociation in a child. *Journal of Hand Surgery,* 2006; 11:55-57.
5. Brandon E, Waters P. Arthroscopic treatment of partial scapholunate ligament tears in children with chronic wrist pain. *J Bone Joint Surg Am.* 2006; 88A:2448-2455.
6. Linscheid RL, Dobyns JH, Beabout JW, Bryan RS. Traumatic instability of the wrist: diagnosis, classification, and pathomechanics. *J Bone Joint Surg Am.* 1972; 54A:1612-1632.
7. Cautilli GP, Wehbe M. Scapho-lunate distance and cortical ring sign. *J Hand Surg Am.* 1991; 16A:501-503.
8. Kaawach W, Ecklund K, Di Canzio J, Zurakowski D, Waters PM. Normal ranges of scapholunate distance in children 6 to 14 years old. *J PediatrOrthop.* 2001; 21:464-467.
9. Watson HK, Ashmead D, Makhlof V. Examination of the scaphoid. *J Hand Surg Am.* 1988; 13A:83-85.
10. Adirim TA, Cheng TL. Overview of injuries in the young athlete. *Sports Med.* 2003; 33:75-81.
11. Patel DR, Nelson TL. Sports injuries in adolescents. *Med Clin North Am.* 2000; 84:983-1007.
12. Loud KJ, Michael LJ. Common athletic injuries in adolescent girls. *CurrOpinPediatr.* 2001; 13:317-22.
13. Blatt G. Capsulodesis in reconstructive hand surgery. *Hand Clin* 1987; 3:81-102.
14. Dautel G, Goudot B, Merle M. Arthroscopic diagnosis of scapho-lunate instability in the absence of X-ray abnormalities. *J Hand Surg Br* 1993; 18B:213-218.
15. Amit Misra N, Aaron BYNG. Hales, Scapholunate instability. Result of dorsal capsulodesis. *JBJS- British Volume, -B Supplement iii,* 2004; 86:328.