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Delayed treatment of elbow pain and dysfunction following Essex-Lopresti injury with metallic radial head replacement: A case series

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Background: Chronic longitudinal radioulnar dissociation has been associated with unpredictable and generally unfavorable outcomes. Metallic radial head replacement may address this treatment deficiency.
Methods: Eight patients were treated with a metallic radial head replacement for chronic longitudinal radioulnar dissociation. The average treatment delay was 3.3 years. All eight patients were seen for a clinical and radiographic assessment.
Results: Five of the 8 failed after a mean of 3 years (range, 1-5.7). Revision to bipolar metallic radial head replacement was successful in the short term in 2 of 3 that failed from aseptic loosening. One of 2 failures due to painful radiocapitellar arthritis was salvaged with a capitellar replacement.
Discussion: Reconstruction for symptoms following an Essex-Lopresti injury remains problematic. A metalic radial head implant appears to be an effective adjunct, but not a perfect solution in all patients. Recognition of the negative impact of residual lateral ulnar collateral ligament laxity is an important observation and should be specifically addressed with the reconstructive procedure.
Conclusion: Metallic monoblock radial head replacement did not reliably address the functional deficiency from chronic radioulnar dissociation primarily due to malalignment and implant loosening. A cemented bipolar radial head implant may provide a better alternative as a long-term solution. Regardless, ligamentous integrity at the elbow should also be addressed at the time of the reconstruction.
Level of evidence: Level IV, Case Series, Treatment Study.

Keywords: Elbow; Essex-Lopresti; metallic; radial head replacement

Concomitant fracture of the radial head, tearing of the interosseous membrane, and disruption of the distal radioulnar joint, commonly referred to as Essex-Lopresti injury, causes longitudinal radioulnar dissociation.[5,16,21,25] The resulting axial instability of the forearm leads to proximal migration of the radius relative to the ulna, which causes secondary disability at the elbow and wrist due to radiocapitellar and ulnocarpal abutment and altered mechanics at the elbow and wrist.[15,18,22]

With acute treatment, favorable outcomes may be possible[5,9,10,11,25]; however, untreated or delayed treatment of the injury has been associated with unsuccessful results in about 80% of patients.[2,3,5,9,12,14,17,19,23-25] With a delay in treatment, the proximal radial migration becomes

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Table I Demographic data for the individual patients (Information is from all individual patients that were treated in a delayed fashion with metallic radial head replacement for residual elbow pain and dysfunction in the setting of a chronic Essex-Lopresti injury)

Case	Sex	Age	Injured side	Dominant side	Treatment at time of injury	Delay RH excision (wks)	Surgical procedures following RH excision, but prior to metallic RH arthroplasty	Associated ligamentous injury at the elbow at the time of metallic RH arthroplasty (clinical; per-operative findings)
1	Female	51	Left	Right	ORIF	417	Silastic RH arthroplasty; Removal silastic RH arthroplasty	Annular ligament deficiency
2	Male	27	Left	Right	Supportive sling	81	None	None
3	Female	41	Right	Right	RH excision	0	None	MCL deficiency, marked valgus and mild varus instability, PLRI‡
4	Male	54	Right	Right	RH excision	0	Arthroscopic debridement TFCC and partial resection distal ulna	None
5	Male	38	Left	Right	Splint cast	17	Ulnar shortening with allograft RH arthroplasty; Revision allograft RH arthroplasty	None
6	Female	40	Right	Right	Splint cast	9	None	PLRI‡
7	Male	33	Right	Right	ORIF, LUCL reconstruction	31	Cutis interposition RH arthroplasty	MCL deficiency
8	Female	46	Left	Right	RH excision	0	None	MCL deficiency, marked valgus instability, PLRI‡

RH, radial head; *ORIF*, open reduction and internal fixation; *LCL*, lateral collateral ligament; *MCL*, medial collateral ligament; *TFCC*, triangular fibrocartilage complex.
‡ Posterolateral rotatory instability (PLRI) is indicative of lateral collateral ligament (LUCL) deficiency.