How I... fix a Monteggia variant injury with a radial head fracture

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Monteggia variant injuries have similar features to the classic lesion, with the addition of features such as a radial head fracture. The aim of treatment is to achieve anatomical reduction of the fracture, congruent reduction of the joint and elbow stability.

Where the ulna is fractured around the coronoid (Figures 1a and b), internal fixation of the ulnar and radial head replacement is usually required (Figures 2a and b). The patient can either be positioned lateral with the elbow flexed over a holder, or supine with the arm across the chest. We have found that the supine position allows optimum intra-operative fluoroscopy, as the elbow can be extended to take images, as required. It also avoids difficulties positioning the obese or multiply-injured patient.

A posterior midline incision is used. The ulnar nerve is identified, to prevent iatrogenic damage, and decompressed, to prevent compression from post-operative swelling. Angulating the ulnar fracture posteriorly facilitates access to the radial head and neck. This avoids a second approach to the radial head through, or releasing the lateral collateral ligament complex. The radial head fragments are removed. The pre-operative radiograph should be scrutinised and any loose fragments removed. The coronoid fragments are fixed via a subperiosteal medial approach, prior to radial head replacement, taking care to preserve the insertion of the anterior band of the medial collateral ligament. The radial head is then replaced, using the resected head and the sigmoid notch as a guide to size and placement. In our experience, the radial head is usually in more than two fragments. We do not advise fixation. We use a smooth-stemmed metal replacement, which acts as spacer. No attempt is made to repair or reconstruct the annular ligament. The role of the replacement is to restore elbow stability, while neutralising the forces acting on the coronoid and ulna. The ulna is then reduced and internally fixed with an anatomical, extended plate to achieve secure proximal fixation. Locking screws are not routinely used.

The surgeon should always be aware of the possibility of associated injuries including the Essex-Lopresti lesion and more extensive elbow instability. Another common pitfall is malreduction of the ulna, leading to persisting radiocapitellar incongruence. A follow-up radiograph should be performed at one to two weeks to ensure that fixation is secure and the elbow is congruent. With secure fixation, immobilisation beyond 14 days is usually unnecessary.

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References