Medial coronoid process disease (MCD) is a common expression of canine elbow dysplasia (CED) that is characterized by a combination of visible cartilage pathology and fragmentation of the underlying subchondral bone. Traditionally, MCD was thought to involve discreet fragmentation of the axial and apical aspects of the medial coronoid process (MCP). Open arthrotomy and arthroscopic visualization of the medial coronoid process in clinically affected dogs has revealed a spectrum of pathology that includes cartilage fissures, fragmentation, chondromalacia-like lesions and ‘kissing’ lesions on the medial side of the humeral condyle. All of these lesions have been associated with varying degrees of synovitis and arthrosis. In a large MCD case series of 263 dogs (332 affected joints), 11% had concomitant OCD of the humeral trochlea. In another case series of 137 dogs (155 joints) with ununited anconeal process (UAP), 16% had concomitant medial coronoid fragmentation. Arthroscopy allows improved visualization of all intra-articular pathology in CED patients, more accurate removal of osteochondral fragments and minimizes the potential for iatrogenic joint damage when compared to medial arthrotomy. Meta-analysis comparison of arthroscopic treatment to medial arthrotomy and medical management demonstrated arthroscopic superiority. The removal of axial and apical fragments of the promontory of the medial coronoid process has traditionally been the surgical standard of care for MCD. Clinical recovery following removal of coronoid fragments have been variable with many dogs having an apparent improvement in their gait and decreased degree of joint pain. Unfortunately, there is no evidence that supports that removal of displaced fragments in MCD patients slows or stops the ongoing development of elbow osteoarthritis.

Further investigation into the degree and extent of medial coronoid pathology has established that accumulation of subchondral fatigue microdamage in the trabecular bone of the medial coronoid process is important in the pathogenesis of MCD. The widespread fatigue microcracks and diffuse microdamage of the subchondral trabecular bone is not isolated to the radial incisure but often extends to the entire cranial portion of the coronoid process. That finding has stimulated the further development and clinical use of sub-total coronoidectomy via both open arthrotomy and arthroscopic-assisted procedures. Although early clinical results are promising, long term studies documenting an advantage over medical therapy or coronoid fragment removal alone are still outstanding. Although arthroscopy is often touted as being a lower morbidity procedure compared with arthrotomy, research in normal dogs using a 2.7mm scope for arthroscopic elbow examination did not show any appreciable difference in post-operative kinetic gait assessment, subjective evaluation scores, and cubital joint range-of-motion between the two procedure types.

Arthroscopic evaluation and debridement of intra-articular elbow pathology is normally performed through a medial arthroscope portal established with the patient in dorsal recumbency and the surgical limb abducted and extended from the body. Techniques that have been employed to maintain the limb in an ideal position for the duration of the procedure include placing a custom padded block under the lateral aspect of the elbow as a fulcrum to allow maximum medial compartment laxity and use of a commercially available positioning arm. A 2.3 mm arthroscope (1.9 mm in small dogs) is recommended to minimize iatrogenic joint trauma. Arthroscopic subtotal coronoidectomy is performed with a caudo-medial scope portal and a cranio-medial instrument portal. Following joint examination, documentation and limited synovial debridement adjacent to the instrument portal, a custom 18cm, 2mm or 5mm osteotome (Gordon osteotome, Veterinary Instrumentation, UK & Jorgensen Laboratories, USA) is introduced into the joint and visualized. The proposed osteotomy line is decided, commonly commencing in the mid-coronoid abaxially and running axially to meet the radius at the coronoid incisure. The position of this osteotomy and the size of the osteotomized portion of the medial coronoid can be varied according to pre-surgical CT imaging of subchondral bone density (hypoattenuation of the coronoid process), the delineation of articular cartilage damage and the apparent softness of the subchondral bone matrix during osteotome passage. Following completion of the osteotomy, the cleaved bone and residual articular cartilage of the process is removed through a combination of rongeur debridement, fine curettage and suction.
Post-operative care includes immediate icing of the surgical site, placement of a soft-support dressing for 48-72 hours to limit swelling and discomfort, analgesic and anti-inflammatory medication for 10 days and gentle ROM exercises. Patients are pen or crate rested with leash-held supervision when not confined for three-to-six weeks post-surgery with a gradual increase in exercise duration and intensity over a further six to ten weeks. The concurrent performance of a distal ulnar osteotomy\(^\text{14}\) in juvenile dogs (<12 months) or sliding humeral osteotomy\(^\text{17}\) in patients with moderate to severe medial compartment disease and a relatively healthy lateral compartment, will alter post-operative management to optimise healing of those procedures.

References