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CANINE ELBOW DYSPLASIA SECONDARY TO FRAGMENTED MEDIAL CORONOID PROCESS: A CASE REPORT

DISPLASIA DO COTOVELO CANINO SECUNDÁRIA À FRAGMENTAÇÃO DO PROCESSO CORONÓIDE MEDIAL: RELATO DE CASO

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Isabela Bazzo da Costa*
*Universidade de Marília (UNIMAR), Marília, São Paulo, Brasil
Orcid: https://orcid.org/0000-0002-4791-0517
isabelabazzo@unimar.br

Cláudia Sampaio Fonseca Repetti*
*Universidade de Marília (UNIMAR), Marília, São Paulo, Brasil
Orcid: https://orcid.org/0000-0002-9441-4647
claudiarepetti@unimar.br

Maria Julia Tebet Boccaletti*
*Universidade de Marília (UNIMAR), Marília, São Paulo, Brasil
Orcid: https://orcid.org/0009-0000-4512-8858
majutebet@gmail.com

Carlos Eduardo de Siqueira*
*Universidade de Marília (UNIMAR), Marília, São Paulo, Brasil
Orcid: https://orcid.org/0000-0002-5981-4282
carlossiqueira@unimar.br

Laís Melicio Cintra Bueno**
**Faculdade ANCLIVEPA (ANCLIVEPA), Taubaté, São Paulo, Brasil
Orcid: https://orcid.org/0000-0003-0196-0540
laisbuenovet@gmail.com

Gustavo Carneiro de Oliveira Cordeiro*
*Universidade de Marília (UNIMAR), Marília, São Paulo, Brasil
Orcid: https://orcid.org/0009-0006-9598-6766
carneirogustavo02@gmail.com

Rodrigo Prevedello Franco*
*Universidade de Marília (UNIMAR), Marília, São Paulo, Brasil
Orcid: https://orcid.org/0000-0002-9385-5117
rodrigoprevedello@unimar.br

Rafael Cerântola Siqueira*
*Universidade de Marília (UNIMAR), Marília, São Paulo, Brasil
Orcid: https://orcid.org/0000-0002-4683-0478
rafasika@hotmail.com

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Abstract
Elbow dysplasia is a multifactorial disease that affects medium and large breed dogs, characterized by changes in joint development that result in lameness, pain and progressive osteoarthritis. Among the main associated lesions, fragmentation of the medial coronoid

Resumo
A displasia do cotovelo é uma doença multifatorial que afeta cães de raças médias e grandes, caracterizada por alterações no desenvolvimento articular que resultam em claudicação, dor e osteoartrite progressiva. Entre as principais lesões associadas, destaca-

process (FMCP) stands out, often diagnosed in young animals, but which can also manifest in adults. This paper reports the case of a three-year-old male mixed-breed canine weighing weighing 28.7 kg, treated with a history of intermittent claudication in the right thoracic limb, especially after physical activities. Physical examination revealed pain when manipulating the elbow, while radiographs showed osteoarthritic alterations. Computed tomography confirmed the presence of fragments in the medial coronoid process, establishing the definitive diagnosis of FMCP. In view of the findings, surgical treatment was chosen by conventional arthrotomy with subtotal coronoidectomy and removal of free fragments. The patient presented a satisfactory postoperative evolution, with good healing, gradual return to limb function, and absence of claudication up to 120 days after the procedure. Post-surgical management included analgesia, antibiotic therapy, anti-inflammatory drugs, and physical therapy recommendations. Despite the poor prognosis due to the degenerative changes already present, the intervention allowed a significant clinical improvement and quality of life for the patient. This report reinforces the importance of early diagnosis by advanced imaging methods, such as tomography, and shows that surgical removal of the fragments is an effective approach to restore function and delay the progression of osteoarthritis in dogs affected by FMCP.

Keywords: Elbow Dysplasia. Fragmentation of the Coronoid Process. Dogs. Arthrotomy. Veterinary Orthopedics.

se a fragmentação do processo coronoide medial (FMCP), frequentemente diagnosticada em animais jovens, mas que também pode se manifestar em adultos. Este artigo relata o caso de um cão macho de raça mista, com três anos de idade e 28,7 kg, tratado por apresentar história de claudicação intermitente no membro torácico direito, especialmente após atividades físicas. O exame físico revelou dor ao manipular o cotovelo, enquanto as radiografias mostraram alterações osteoartríticas. A tomografia computadorizada confirmou a presença de fragmentos no processo coronoide medial, estabelecendo o diagnóstico definitivo de FMCP. Diante dos achados, optou-se pelo tratamento cirúrgico por meio de artrotomia convencional com coronoidectomia subtotal e remoção dos fragmentos livres. O paciente apresentou evolução pós-operatória satisfatória, com boa cicatrização, retorno gradual da função do membro e ausência de claudicação até 120 dias após o procedimento. O manejo pós-cirúrgico incluiu analgesia, terapia antibiótica, medicamentos anti-inflamatórios e recomendações de fisioterapia. Apesar do mau prognóstico devido às alterações degenerativas já presentes, a intervenção permitiu uma melhora clínica significativa e melhoria na qualidade de vida do paciente. Este relato reforça a importância do diagnóstico precoce por meio de métodos avançados de imagem, como a tomografia, e mostra que a remoção cirúrgica dos fragmentos é uma abordagem eficaz para restaurar a função e retardar a progressão da osteoartrite em cães afetados pela FMCP.

Palavras-chave: *Displasia do Cotovelo. Fragmentação do Processo Coronoide. Cães. Artrotomia. Ortopedia Veterinária.*

1 INTRODUCTION

Elbow dysplasia (ED) is a condition of abnormal development of the elbow joint, characterized by structural changes that often result in lameness in medium and large dogs. It is a disease of global relevance, being observed in several breeds, and which can compromise the functionality of the animal throughout its life (Robins; Innes, 2016).

ED is recognized as a multifactorial disease, whose clinical manifestation is associated with complex interactions between genetic, environmental, nutritional, mechanical, and traumatic factors. Studies also indicate that excess body weight can aggravate the condition, although hereditary predisposition is considered the predominant factor in most studies (Spadin; De Lima, 2019).

The etiology of elbow dysplasia remains poorly elucidated, despite several existing studies. Some mechanisms have been suggested as factors in the development of dysplasia, including osteochondrosis, a disturbance in endochondral ossification, asynchronous bone growth, different types of elbow joint incongruence, and disparity of muscle and/or intra-articular biomechanical forces (Michelsen, 2013). ED is considered a polygenic hereditary disease, involving multiple genes whose hereditary pattern is not completely understood. In addition to the hereditary component, there is evidence of the intervention of environmental factors that can affect the expression of the dysplastic phenotype, such as excessive exercise, occurrence of trauma, hormonal effects, excess weight during the growth of the individual, rapid growth that leads to mechanical stress in specific areas (Vezzoni; Benjamino, 2021).

From a pathological point of view, elbow dysplasia may derive from at least four distinct primary alterations: osteochondritis dissecans (OCD), non-union of the anconeual process (NUPA), fragmentation of the medial coronoid process of the ulna (FMCP) and joint incongruence (JI) (Junior *et al*., 2009). These lesions, alone or combined, are capable of evolving into progressive osteoarthritis, compromising joint health and the well-being of the animal (De Andrade, 2020).

The orthopedic conditions FMCP, OCD, NUPA and JI can occur individually or together, which causes worsening of ED and affecting the long-term prognosis, and can cause irreversible elbow osteoarthritis and functional loss. Therefore, it is essential to carry out an early diagnosis and appropriate treatment to slow the progression of the disease (Andrade *et al*., 2020; Griffon *et al*., 2012).

FMCP is inserted within the spectrum of the disease of the medial coronoid process, causing fissures in the process itself, pathological alterations in the subchondral bone, such as chondromalacia, in addition to erosion of the cartilage of the medial coronoid process and the adjacent humeral condyle. These changes compromise joint stability and increase the load on neighboring structures (Dallago *et al*., 2015). The exact

etiology of FMCP is not yet fully clarified (Andrade *et al*., 2020; Gemmill; Clements, 2017), but the most accepted etiological hypothesis involves radio-ulnar incongruence, especially when the radius is shorter, causing overload in the coronoid process, thus predisposing to fragmentation of the medial coronoid process (Fossum *et al*., 2014).

FMCP is the most commonly observed clinical form (Trhall, 2010). Young medium and large animals have a higher incidence, since they have a process of ossification of the coronoid process completed late when compared to smaller breeds (Samoy *et al*., 2011). The disease is characterized by fragmentation or failure of the medial coronoid process of the ulna with separation that can be partial or complete, with primary injury to the subchondral bone and secondary changes in the articular cartilage (Andrade *et al*., 2020; Hazewinkel, 2008).

The first signs related to the disease of the medial coronoid process usually appear between four and six months of age, and may manifest later, at six to eight months or even at an advanced age, depending on the severity of the lesion and the speed of development of the animal (Michelsen, 2013).

The diagnosis of ED in dogs requires an integrated approach, combining the evaluation of clinical signs, detailed physical examination of the joints, and complementary imaging tests. Early diagnosis of primary lesions is essential to enable timely therapeutic interventions and favor a more favorable prognosis (Spadin; De Lima, 2019). X-ray was the standard test for the evaluation of ED; however, in recent years, advanced imaging modalities, such as computed tomography and magnetic resonance imaging, have allowed a more detailed analysis of the joint (Peirone; Cappellari, 2011; Janutta; Distl, 2008; Fitzpatrick; Yeadon, 2009).

Computed tomography (CT) offers a more accurate and specific morphological diagnosis, allowing three-dimensional visualization of joint structures without bone overlap. This method is particularly useful for the identification of fragmentation of the medial coronoid process, whose radiographic detection is often limited. To perform CT, dogs must be submitted to general anesthesia, positioned in the supine position, with thoracic limbs extended, forearms parallel and pelvic limbs fixed, ensuring clear and bilaterally comparable images (Peirone; Cappellari, 2011; Spadin; De Lima, 2019).

Early management of all forms of ED, especially during the animal's growth phase, is considered essential to minimize the long-term consequences and delay the

development of irreversible osteoarthritic changes (Andrade *et al*., 2020; Vezzoni; Benjamino, 2021). The ideal therapeutic approach is multimodal, integrating medical, surgical, and rehabilitative strategies, in order to optimize joint function and animal well-being (Bruecker *et al*., 2021).

In more moderate cases, conservative treatment can be instituted, considering anti-inflammatory medications, chondroprotectors and rest. In all other cases, surgical treatment is recommended, with arthrotomy being an option (Selmi, 2001). Techniques such as sliding osteotomy of the humerus, subtotal osteotomy of the coronoid process, cancellous bone graft with or without metal implants, removal of free fragments and tearing down of the affected area, are options that can be used with a high percentage of success (Fitzpatrick; Yeadon, 2009). These approaches have a high success rate in restoring joint function and controlling disease progression (Selmi, 2001; Fitzpatrick; Yeadon, 2009).

The prognosis of ED is variable, being influenced by the severity of the lesions, the degree of progression of osteoarthritis, and the medical and surgical interventions adopted. In general, the prognosis should be considered reserved, since the disease tends to evolve over time, especially with an increase in body weight and level of physical activity, promoting the worsening of degenerative joint changes (Vezzoni; Benjamino, 2021).

The present study aims to report a case of fragmentation of the medial coronoid process in a three-year-old mixed-breed dog, in which surgical treatment was performed with the technique of subtotal coronoidectomy by conventional arthrotomy and removal of free fragment.

2 CASE REPORT

The patient, a three-year-old mixed breed male canine, weighing 28.7 kg, was treated at the Planeta Animal Veterinary Clinic, Marilia, Sao Paulo. The owner reported that the patient had intermittent claudication in the right thoracic limb, especially after exercise, changing his temperament becoming more lethargic.

A general physical examination of the patient was performed with the measurement of parameters such as heart rate, respiratory rate, rectal temperature,

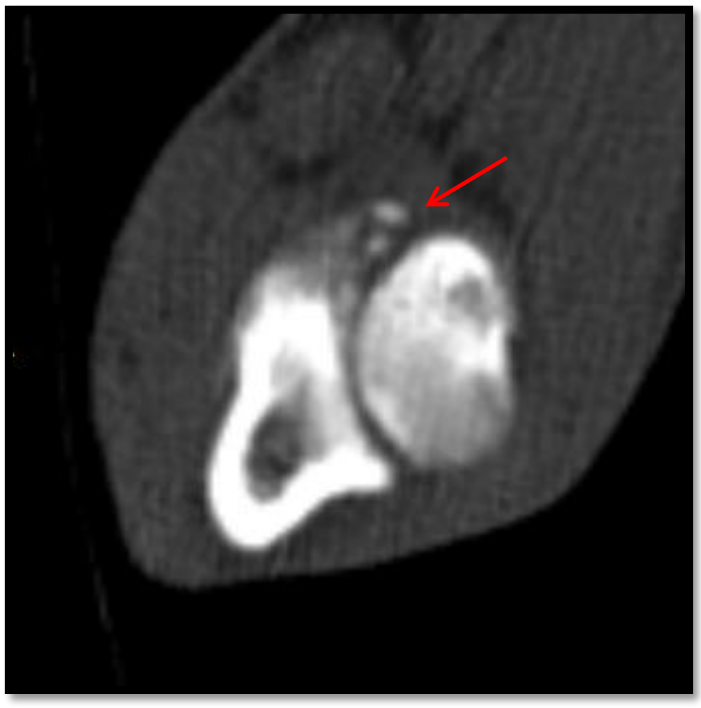
capillary filling time, mucous membrane coloration, and skin turgor, which were all within the reference of the species. In the specific orthopedic physical examination of the right thoracic limb, a joint edema with a slight increase in volume and a contracture in the elbow joint region was observed on palpation, when moving the limb it was observed absence of crepitus and the presence of pain when flexing and extending the joint in its entirety. The patient presented signs of pain during manipulation along with worsening of claudication after manipulation of orthopedic exams. In the contralateral limb, there were no signs of pain and crepitus on orthopedic examination.

As a result of the observations in the clinical examination, a radiographic study was indicated in the region of the cubit joint in both limbs. Radiographic examination was performed in mediolateral projections in extension, mediolateral in hyperflexion, and craniocaudal in pronation. It was possible to visualize bone alterations in both limbs indicating osteoarthrosis processes, with the presence of osteophytic proliferation in the right limb. In the mediolateral projection of the right limb, sclerosis of the ulna adjacent to the medial coronoid process, bone proliferation indicative of osteoarthrosis in the radial head and in the anconeus process (Figure 01).

In addition, in the radiographic evaluation of the right limb, it was not possible to diagnose any alteration that would confirm elbow dysplasia due to an injury. In this sense, the animal was sent for tomography and congruent articulation was observed, with irregularity of the medial coronoid process of the ulna, associated with the presence of two small fragments, each about 0.2 cm long, and the other joint margins regular and well-defined, with soft tissues without increases in volume or areas of heterogeneity. Confirming the diagnosis of fragmentation of the coronoid process (Figure 02).

Figure 1. Radiograph in the mediolateral position of the right thoracic limb, showing sclerosis of the ulna adjacent to the medial coronoid process, bone proliferation indicative of osteoarthrosis in the head of the radius and in the anconeus process

Figure 2. Cross-sectional tomography of the right thoracic limb, showing fragmentation of the coronoid process (arrow)



Once the diagnosis of fragmentation of the coronoid process was established in an adult animal, the procedures aimed to reduce pain, maintain limb function and delay the

progression of osteoarthrosis resulting from this pathology. Thus, surgical treatment was indicated to remove the fragments, with the purpose of providing more comfort to the patient, informing the tutor that there was a probability of progressive advancement of osteoarthrosis, even with the surgery.

The tutor agreed to perform the procedure, after due clarification about the form of execution, as well as the anesthetic and surgical risks involved. Thus, the necessary tests for the preoperative evaluation were performed, such as blood count (Table 01), leukogram (Table 02) and biochemical profile (Table 03). The results of the requested tests showed changes in the leukocyte count with leukocytosis, neutrophilia and monocytosis, but without change in morphology, suggestive of acute stress, with an increase in total proteins and globulin. Considering that the analysis of the erythrogram and the biochemical profile of liver and kidney function did not show any alterations, it was possible to authorize the surgical procedure.

Table 1. Result of clinical analysis of blood sample for blood count.

Parameter	Findings	Reference Range
Erythrocyte	7.75 (m/µL)	5.65 – 8.87 (M/µL)
Hemoglobin	16.9 (g/Dl)	13.1 – 20.5 (g/Dl)
Haematocrit	45,3 (%)	37,3 – 61,7 (%)
VCM	71.5 (fL)	61.6 – 73.5 (fL)
CHCM	37.7 (g/dL)	32.0 – 37.9 (g/dL)
Platelets	345 (K/µL)	148 – 484 (K/µL)

Source: Planeta Animal Veterinary Clinic (2025).

Table 2. Result of clinical analysis of blood sample for leukogram.

Parameter	Findings	Reference Range
Total leukocytes	25.54 (K/µL)	5,05 – 16,76
Neutrophils	21.56 (K/µL)	2,95 – 11,64
Eosinophils	0.72 (K/µL)	0,06 – 1,23
Basophils	0.02 (K/µL)	0,00 – 0,10
Monocytes	2.04 (K/µL)	0,16 – 1,12
Lymphocytes	1.20 (K/µL)	1,05 – 5,10

Source: Planeta Animal Veterinary Clinic (2025).

Table 3. Result of clinical analysis of blood sample to perform a biochemical profile.

Parameter	Findings	Reference Range
Albumin	3.2 (g/dL)	2,3 – 4,0
ALT	55 (U/L)	10 – 125
Alkaline Phosphatase	62 (U/L)	23 – 212
Creatinine	0.7 (mg/dL)	0,5 – 1,8
Glucose	110 (mg/dL)	74 – 143
Globulins	5.5 (g/dL)	2,5 – 4,5

Urea	18 (mg/dL)	7 – 27
Total Protein	9 (g/dL)	5,2 – 8,2

Source: Planeta Animal Veterinary Clinic (2025).

The animal was kept fasting for 12 hours and for two hours of water fasting for the surgical procedure. On the day of surgery, the patient's general condition was evaluated and the pre-anesthetic preparation was performed, with patient weighing, trichotomy of the right cephalic vein, antisepsis of the region and venipuncture with a 20G catheter and occluded with an adapter for infusion of fluid therapy, anesthetics and necessary medications. For pre-anesthetic medication, neuroleptoanalgesia was administered with dexmedetomidine 0.05% (2 μg/kg) and methadone 1% (0.2 mg/kg), both intramuscularly. After 10 minutes, the patient presented adequate sedation and a trichotomy of the right thoracic limb and preoperative asepsis with 2% chlorhexidine degerming were performed. The patient was then referred to the operating room and was prepared for anesthetic induction with 1% propofol (3 mg/kg) and 10% ketamine (1 mg/kg), both intravenously. After the loss of mandibular tone and laryngotracheal reflex, the patient was intubated with an endotracheal tube of a diameter appropriate to the size of the animal and connected to the anesthetic circuit providing 100% oxygen with a diluent flow of 50 mL/kg/minute in a valve circuit. Continuously, the patient was positioned in the left lateral decubitus position, with the right thoracic limb being cranially attached to the surgical field and the drugs for maintenance in total intravenous anesthesia (TIVA) were performed by means of two infusion pumps, one pump for infusion of propofol only and the other for infusion of the other drugs (Table 04).

Table 4. Anesthetic protocol used in surgical procedure to remove the anconeal process.

Stage	Medication	Dose	Route of administration
Pre-anesthetic medication	Dexmedetomidine 0.05% Methadone 1%	2 μg/kg 0.2 mg/kg	Intramuscular
Induction	Propofol 1% Ketamine 10%	3 mg/kg 1 mg/kg	Intravenous
Maintenance	Ketamine 10% Dexmedetomidine 0.05% Propofol 1%	0.6 mg/kg/h 2 μg/kg/h 0.2 mg/kg/min	Intravenous

Source: Planeta Animal Veterinary Clinic (2025).

The animal was monitored throughout the intraoperative period, with the aid of a multiparameter monitor of the following parameters: Heart rate (HR) in bpm and heart rhythm by electrocardiogram; Oxyhemoglobin saturation (SpO_2) in % by pulse oximetry; Systolic, media, and diastolic artery pressures (SBP, MBP, and DBP) in mmHg by the oscillometric method; Core temperature (CT) in ºC by esophageal thermometer and respiratory rate (*f*) in mpm.

The procedure began with a skin incision with a scalpel in the caudomedial part of the limb, starting in the proximal portion of the medial epicondyle of the humerus and a curvature until it ended near the proximal portion of the radius (Figure 03). A resection of the subcutaneous tissue with Metzenbaum scissors was performed in order to expose part of the triceps brachii muscle. With the aid of Weitlaner retractors, it was possible to open the field of vision and move the triceps brachii muscle caudally to the visualization of the anconeal muscle. An incision was made along the joint capsule parallel to the medial epicondylar crest to access the interior of the joint. With the aid of two Hohmann elevators, the entire fragmented coronoid process was removed, along with part of the fibrous tissue that was adhered to (Figures 04 and 05).

Figure 3. Patient in the left lateral decubitus position demonstrating the skin incision.

Figure 4. Patient in left lateral decubitus demonstrating fragmentation of the coronoid process (arrow)

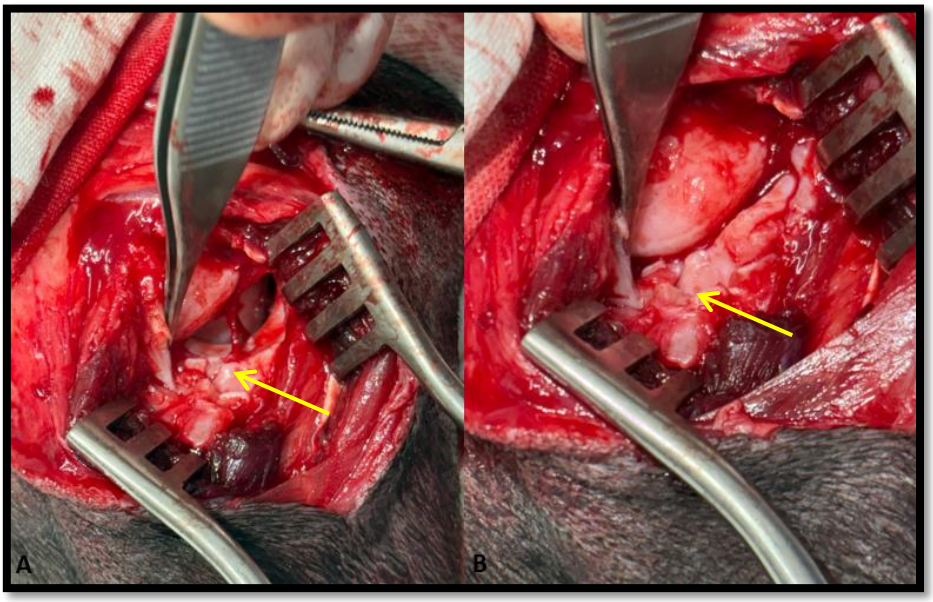
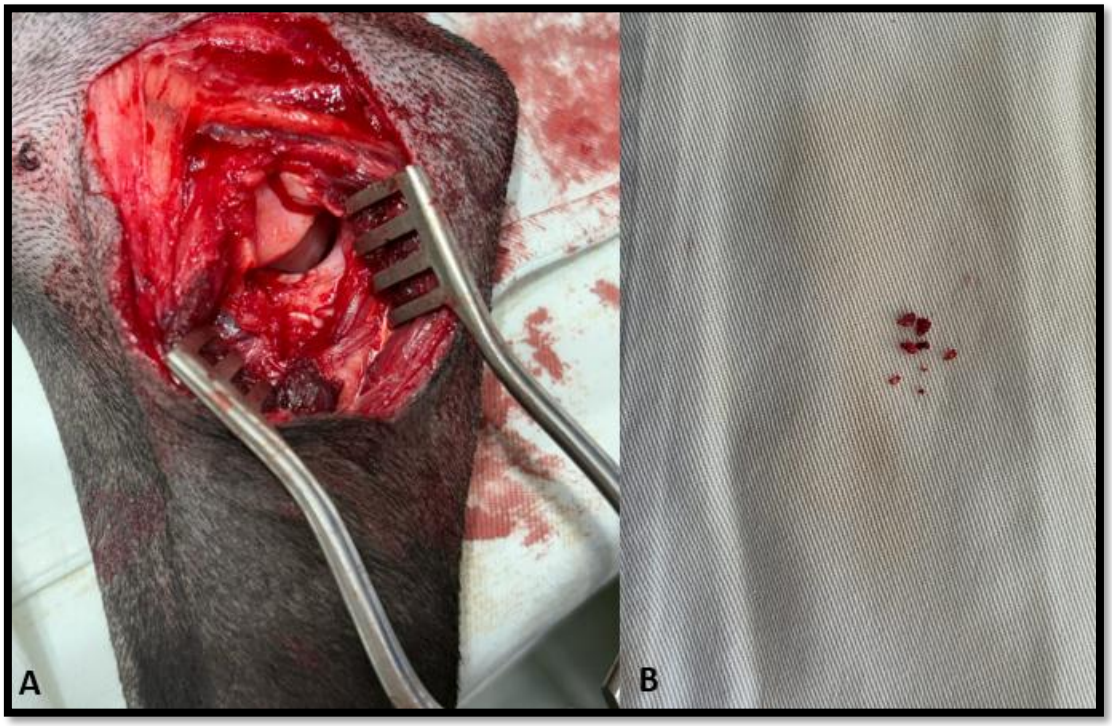


Figure 5. Patient in the left lateral decubitus position demonstrating articulation after removal of the fragments of the coronoid process (A). Fragments of the coronoid process (B).



Tissue synthesis was initiated with the suture of the anconeal muscle and the joint capsule in a Wolf pattern, with a 2-0 monofilament nylon thread. Finishing with the

dermorrhaphy, using a 2-0 monofilament nylon thread with a simple interrupted suture pattern.

Upon leaving the operating room, postoperative medications were administered, and hospitalization was carried out for monitoring the patient for 24 hours in the clinic. Upon the patient's release, the tutor was instructed to clean the surgical wound daily with 0.9% saline solution and gauze for a period of 10 days until the return for the removal of the stitches. Oral medications were also prescribed, such as cephalexin hydrochloride 30 mg/kg, BID for 10 days, tramadol hydrochloride 4 mg/kg, BID for 5 days, maxicam 0.1 mg/kg, SID for 4 days, and dipyrone 25 mg/kg, BID for 5 days.

The patient returned to the clinic for removal of the stitches 10 days after the procedure, presenting good healing and complete closure of the surgical wound. It was recommended that the tutor seek a trained professional to perform physical rehabilitation, along with periodic follow-up for physical evaluation and control of the joint condition of the limbs.

After 30, 60, 90 and 120 days of follow-up, according to the tutor, the animal showed clinical improvement until the present report, becoming more active, with functional use of the affected limb and with absence of lameness.

3 DISCUSSION

Fragmentation of the medial coronoid process (FMCP) is recognized as a degenerative joint disease that compromises the elbow joint in dogs, with a higher incidence in large and giant breeds, as reported by Harasen (2003). However, certain breeds show an even more pronounced predisposition, among which the German Shepherd, Basset Hound, Italian Cane Corso, Great Dane, Greyhound, Italian Spinone, Saint Bernard, Newfoundland and Black Russian Terrier stand out, as described by Vezzoni (2007). The onset of clinical signs usually occurs between six and twelve months of age, a phase corresponding to the rapid growth of the animal; however, there are reports of individuals who remain without evident clinical manifestations during their youth, developing alterations compatible with degenerative joint disease (DJD) in later stages of life. Among the main complaints presented by the tutors, intermittent or persistent claudication stands out, which tends to intensify after physical activities, associated with

pain with manipulation, joint crepitus and, in some cases, changes in behavior due to chronic discomfort (Vezzoni, 2007). In the case reported here, these clinical manifestations were described by the responsible person during the anamnesis, which led to the indication of radiographic examinations in order to confirm the diagnosis, evaluate the extent of the alterations and determine whether the lesion was unilateral or bilateral. In this context, the observation by Pieters (2017) stands out, according to which the prevalence of cases of nonunion of the anconeual process (NUPA) with bilateral involvement can vary from 20% to 35%, reinforcing the importance of complete radiographic investigation in patients with suspected elbow dysplasia.

It is noteworthy that computed tomography played a decisive role not only in confirming the diagnosis, but also in defining the therapeutic approach adopted. According to Danielson *et al*. (2006), the surgical approach is indicated mainly in dogs up to one year of age, as long as they present compatible clinical signs and image alterations suggestive of fragmentation of the medial coronoid process. The authors also highlight that early surgery, preferably before the establishment of joint degenerative changes, is directly related to a more favorable prognosis. In the present case, however, the patient was three years old and already demonstrated alterations compatible with degenerative joint disease, a fact that limited the potential for full recovery after treatment. Another relevant point refers to the observation of unilateral joint degeneration, a condition considered uncommon, since, in degenerative processes of the elbow, compensatory overload often results in secondary involvement of the contralateral limb. This pattern of clinical evolution has already been widely described in chronic joint disorders (Buron; Owen, 2008; Frazho *et al*., 2010; Grunkraut, 2014), which reinforces the uniqueness of the reported case.

According to Remy *et al*. (2004), the treatment of elbow dysplasia associated with fragmentation of the medial coronoid process can follow either a conservative or surgical approach, depending on the severity of the clinical picture and imaging findings. In the present case, the choice for surgical intervention was based on the identification of the bone fragment by means of computed tomography, a conduct that is in line with Van Ryssen *et al*. (1993), who describe that, in the face of more severe cases, surgical removal of the fragment is the procedure of choice, since it aims to preserve the function of the limb, slow the progression of osteoarthritis and reduce joint pain. Likewise, the

therapeutic protocol adopted considered the recommendations of Vezzoni and Benjamino (2021), which indicate the surgical excision of the fragments in adult dogs, as long as there is no evidence of advanced osteoarthrosis, which reinforces the importance of a careful evaluation of the extent of degenerative lesions before defining the conduct. In this context, the association between the detailed anamnesis, the findings of the physical examination, and the alterations evidenced in the radiographic and tomographic examinations was decisive for the diagnostic confirmation and for the choice of the treatment modality. To remove the fragment, we opted for conventional arthrotomy, a technique described by Meyerlindenberg (2002), which allows adequate visualization of the medial region of the joint. Alternatively, as mentioned by Fossum (2015), the lateral approach can be considered, with advantages such as greater ease of patient positioning and lower risk of ulnar nerve injury. It should be noted that, contrary to what was recommended by Meyerlindenberg (2002), in this report, joint lavage with lactated Ringer's solution was not performed, and capsulorrhaphy was conducted using absorbable sutures in a Wolf pattern, with a 2-0 monofilament nylon thread.

The surgical technique used in the present case consisted of conventional arthrotomy, an approach that is in accordance with the literature, since, according to Fitzpatrick and Yeadon (2009), bone fragments resulting from FMCP can be removed both by means of traditional arthrotomy and by arthroscopy. Although the authors mention that arthroscopy presents superior results in relation to arthrotomy, Beale *et al*. (2003) emphasize that its main limitation is linked to the need for advanced training and practical experience, considering the requirement of coordination between indirect visualization, performed through the monitor, and the manipulation of the arthroscope and instruments inside the joint. This difficulty is enhanced by the reduced joint space, increasing the risk of iatrogenic injuries. In addition to the technical factor, the arthroscopic procedure is associated with significantly higher costs for the acquisition and maintenance of equipment when compared to conventional arthrotomy, which often limits its routine clinical application.

In the case in question, due to the degenerative changes previously established in the elbow joint, postoperative follow-up was conducted with the aim of delaying the progression of the joint disease (Pieters, 2017). As emphasized by Lee *et al*. (2008), the surgical removal of osteochondral fragments in joints already affected by advanced

osteoarthrosis is not able to prevent degenerative evolution. Thus, it is essential to advise the responsible person about the possibility of worsening osteoarthritis, even after the surgical intervention. In this context, during the follow-up evaluation for suture removal and orthopedic reexamination, supportive measures were recommended, such as physical activity restriction, adequate nutritional management, specific supplementation, and strict control of body weight, all aimed at reducing joint overload.

In addition, physical therapy was indicated as a complementary therapeutic strategy, since, as described by Levine *et al*. (2008), this approach contributes significantly to functional recovery, maintenance of mobility, promotion of well-being, and improvement of the quality of life of patients with locomotor disorders and musculoskeletal disorders.

Ten days after the surgical intervention, the patient was reassessed for suture removal and follow-up orthopedic examination. Adequate healing of the surgical wound was verified, in addition to normal ambulation, with no evidence of pain or lameness. At this time, a periodic follow-up protocol was established, with scheduled returns every three weeks during the following 90 days. Restriction of physical activity for a period of six weeks was also recommended, as described by Kombedde and Vasseur (1988), a fundamental measure to prevent joint overload in the initial postoperative period.

Three months after surgery, the animal had a good quality of life, maintained normal ambulation, absence of lameness and used the affected limb functionally. These findings are in line with what was described by Fossum *et al*. (2015), who report that, despite the poor prognosis due to the possibility of progression of degenerative joint disease, the removal of intra-articular fragments significantly reduces the occurrence of claudication and allows a higher level of activity in treated patients.

According to Meyer-Lindenberg (2002), the prognosis of medial coronoid necrosis (MUP) depends on multiple factors, being directly influenced by the degree of pre-existing joint involvement. In many cases, the outcome remains reserved due to the high probability of progression to degenerative joint disease, reinforcing the need for continuous clinical monitoring and complementary therapeutic measures to delay the progression of the disease.

4 CONCLUSION

Fragmentation of the medial coronoid process is one of the main causes of lameness in dogs, and should be considered even in adult patients of mixed breed, as in the case reported. Computed tomography proved to be an essential tool for diagnostic confirmation and definition of therapeutic management. Conventional arthrotomy with removal of the fragments resulted in satisfactory functional recovery and absence of claudication for up to 120 days of follow-up, even in the face of previously established degenerative changes. Although it does not prevent the progression of osteoarthritis, the surgical intervention contributed significantly to the clinical improvement and quality of life of the patient.

It is also important to highlight the need for long-term follow-up, associated with complementary measures, such as physical therapy, body weight control, and adequate nutritional management, in order to delay the evolution of joint disease. This case reinforces the importance of early diagnosis, combined with the use of advanced imaging methods, for the adoption of effective therapeutic strategies with better prognostic prospects.

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Authors' Contribution

All authors contributed equally to the development of this article.

Data availability

All datasets relevant to this study's findings are fully available within the article.

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