Sliding Humeral Osteotomy (SHO)

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NOVOS Forum

Stockholm January 17-18, 2015
Study 1

Mason et al: In vitro force mapping of normal canine humeroradial and humeroulnar joints, AVJR, 66, 2005

- Objective: To determine the distribution of force between the articular surfaces of the humerus and radius and between the humerus and ulna in normal dogs

- 48-49% of the force was transmitted to the ulna
Study 2


- Objective: To evaluate areas of articular contact of proximal portions of the radius and ulna in normal elbows

- Result: Specific areas of the radius, craniolateral aspect of anconeus proc. and medial coronoid proc. takes up the load
Study 3

Fujita et al, Effect of humeral osteotomy on the joint surface contact in canine elbow joints, AJVR 64, 2003

- Objective: To determine the effect of sliding and wedge osteotomies of the humerus on the joint surface contact areas

- Humeral osteotomies alter the joint surface contact areas. It may decrease the contact areas in pathological areas, but may induce focal increase in pressure and cartilage damage
SHO

- Based on the concept of unloading the medial compartment of the elbow joint
- Typically dogs with FCP/elbow OCD
- Several studies have been published
Study 4


• 59 limbs/39 dogs

• Mean age: 45 mths

• Mean preop lameness: 19 mths
Results:

• Lameness improved in 100% by 26 weeks

• Lameness resolved in 65% (21/32)

• Major complications calling for surgical intervention: 17%, 22%, 5% for different techniques

• Histological examination of 2 elbows at >12 mths revealed fibrocartilage cover of medial humeral condyle
Medium and long term evaluation of sliding humeral osteotomy in dogs.
Wendelburg KM¹, Beale BS.

Journal

Abstract
OBJECTIVE: To evaluate medium and long term effects of sliding humeral osteotomy (SHO) in dogs.
STUDY DESIGN: Prospective study.
ANIMALS: Dogs (n = 32).
METHODS: Data (2008–2010) collected from medical records included force plate data, radiographs, and a 15 question owner survey of dog soundness before SHO and at final evaluation.

RESULTS: All dogs except 2 exceeded their preoperative ground reaction forces in the operated limb and there was a statistically significant upward trend in ground reaction forces compared with the contralateral limb. Radiographic osteophytosis using the IEWG protocol had not progressed on the operated limb except in 1 dog.

Most (90%) owners felt that lameness had diminished at the final evaluation compared with preoperative lameness. Ten dogs had postoperative complications; 6 were considered major, requiring further surgery.

CONCLUSIONS: SHO can be performed successfully in dogs to limit the radiographic progression of osteophytosis and increase use of the affected limb; however, the complication rate is high and further implant or technique modifications are needed to improve results.
Criterias for inclusion/exclusion

• Inclusion
  - Medial and large breed dogs
  - Not age dependent
  - Full thickness erosions of the joint cartilage of the medial side
  - Severe clinical signs

• Exclusion
  - Cartilage erosions on the lateral side
Equipment

• NGD (New Generation Device) special SHO equipment:
  • 3,5 mm SHO-plate with 7,5 and 10 mm step
  • 3,5 mm MiniSHO-plate with 7 mm step
  • Locking screws 4,0 mm, 3,5 mm
• Basic orthopedic equipment incl. drill
Technique

- Medial approach to the humerus
- Place the plate
- Temporarily fix it
- Osteotomy
- Pull the bone to the plate
- Permanently fix it
- Suture
Course

• Mandatory

• I did the course 2009 at the ACVS-meeting (theoretical + practical)

• My experiences…”
Ozzy

Rottweiler, male, 6 mths

History: Lameness 10d

Clin ex: 3/5 lame

Severe pain from elbow
Ozzy

• Lameness continues

• 2 mths later at 8 mths of age arthroscopy was performed in both elbows and bilateral FCP with moderate cartilage damage on left side
Ozzy

• 1 mth later still severely lame
  • CT
  • Arthroscopy: Now severe cartilage damage
Ozzy

SHO was performed
Ozzy
Ozzy

- 5 days post surgery
Ozzy
Ozzy

• 3 mths post surgery
Vizla

- 8 years old German shepherd
- Unilateral chronic lameness, moderate osteoarthrosis and medial compartment syndrome
- Non surgical treatment options had not been satisfying (NSAID, physiotherapy, supplements)
Vizla

Postoperatively + 3 mths, no lameness after 5 mths
Personal experiences

- Performed >10 cases
- Follow-up on 7 cases
- 3 early cases had major complications
- 4 of later cases were showed no lameness or mild lameness 3-6 mths post surgery
Conclusions

• Several publications

• Learning curve

• Not too difficult to perform, but very precise surgery in order to avoid complications

• Good compliance from owners is important

• Takes time, 3-6 mths, to positive clinical results

• Results can be surprisingly good
"Mr. Osborne, may I be excused? My brain is full."