A chronic shoulder luxation acquired by a Minishetty stallion on pasture was repaired with an arthrodesis using a broad veterinary LCP 3.5. Six weeks after the surgery, the patient is able to trot and canter with minimal lameness. This type of arthrodesis is only possible in very small horses.

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Shoulder arthrodesis in a Minishetty stallion

A 7-year-old Minishetty stallion presented with three weeks of severe lameness in the left fore limb. A preliminary diagnosis of a radial nerve paralysis was made and as no improvement occurred, radiographs were taken and a tentative diagnosis of subluxation of the scapulohumeral joint was made. The subluxation could not be manually reduced and the patient was referred to the equine clinic in Zurich. The stallion was in good physical condition with grade IV to V/V lameness and favored the limb constantly (Fig 1). The radiographic evaluation confirmed the tentative diagnosis of subluxation of the left humeral head (Fig 2). As a result of the three week delay, the medial rim of the glenoid edged a linear indentation into the humeral head (Fig 2). Due to the delay in diagnosis and the articular damage on the humeral head, shoulder arthrodesis was recommended.

Previous experience of the senior author with this type of treatment has allowed small horses to bear weight on the limb in a standing position with a mechanical gait anomaly.

Surgical technique
Induction of anesthesia and administration of broad-spectrum perioperative antibiotics was routine and the animal was positioned in right lateral recumbency on the operating table. Following aseptic skin preparation and draping, the skin was opened along the cranial edge of scapula and extended over the glenoid tubercle distally to the mid-humerus region. After splitting the brachiocephalicus muscle longitudinally, the biceps brachii muscle was identified and its tendon of origin at the supraglenoid tubercle was isolated and transected allowing

Fig 1  “Sky” at the time of admission, favoring the injured limb constantly.

Fig 2a  Craniocaudal radiographic view demonstrating the abnormal position of the glenoid cavity relative to the humeral head. The indentation in the humeral head is easily recognizable (The glenoid rim is positioned in the indentation).

Fig 2b  Lateral radiographic projection depicting both shoulder joints (the subluxated one is positioned on the left side of the x-ray). The subluxated left joint does not show a radiographic joint space, compared the normal right joint.
access to the shoulder joint (Fig 3). The articular damage created by the glenoid rim was readily visible on the humeral head. After removing the articular cartilage from the humeral head and the glenoid cavity, the suprascapular nerve was identified. The joint was subsequently realigned in a neutral position. A 16 hole broad veterinary LCP 3.5 was contoured to the cranial aspect of the scapula and proximal half of the humerus and affixed to the scapula with six locking head screws and five into the humerus. Over the glenoid joint three transarticular 3.5mm cortex screws were inserted in position screw technique to allow them to angulate away from each other (Fig 4). One locking head screw crossed the joint as well.

A 50mg Garamycin sponge (Syntacoll GmBH, Saal, Germany) was placed next to the plate and the incision closed. Because the surgery site could not be covered with a bandage, a stent bandage consisting of a gauze sponge was sutured over the skin incision site using a 0 monofilament synthetic suture material (Biosyn). The postoperative radiograph revealed good position of the joint and proper seating of the implants (Fig 5).

The stallion recovered without complications and subsequently started to use the limb more and more during the remainder of its stay at the clinic. Daily physiotherapy was applied during its stay at the clinic. Ten days postoperatively the staples were removed and the following day the animal was released from the hospital. Six weeks after the surgery the stallion uses its limb during trot and canter on the field and is feeling just fine.

Discussion
Shoulder joint arthrodesis is a rare surgical intervention in Minishetties with mixed success1. This maybe due to trans-action of the biceps tendon origin which allows proper plate position on the humerus. This type of approach has not been described and it is foreseeable that it would be associated with a considerable amount of pain during ambulation as the soft tissues over the plate scar allowing increasing postoperative function. This type of recovery could be observed in this Minishetty stallion, despite fact that the follow-up was somewhat short. The light weight of the animal and the relatively small forces acting on the surgery site are also possible explanations for the good result. The broad LCP 3.5 is a very stiff plate with slightly staggered holes to allow screws in alternating positions so as to avoid interference between the screws that crossed the joint as well as the use of cortex screws. Lag screw technique was deemed to be unnecessary, again because of the angles the screws were inserted relative to each other.

Although in equine osteosynthesis it is customary to fill every plate hole with a screw2, the use of the locking system may make it possible to soften this absolute rule.

The outcome of the case is very encouraging but only time will tell if the procedure will also be feasible for bigger horses.

References

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Fig 3 The biceps tendon is transected (left) and a Penrose drain marks the suprascapular nerve. In the center of the picture the whitish articular cartilage is recognized.

Fig 4 The LCP is in place showing the cortex screws inserted across the joint.

Fig 5 The lateral postoperative radiograph shows the plate applied to the cranial surface of the distal scapula and the proximal humerus. The screws are of adequate length.