Septic arthritis is the most common condition affecting the joints in cattle. In Israel, arthritis count for 13.8% of lameness cases. Direct trauma is a common cause of septic arthritis in adult cattle. The distal limb, being less protected by soft tissue, is more exposed to external trauma especially if the environment favors it. The most common joints infected are: carpus, tarsus and fetlock. However, stifle is commonly infected in young animals but the origin is remote infection. A retrospective study on bacterial culture of 172 cases of septic arthritis showed that *Arcanobacterium pyogenes* was the most common bacteria isolated (35% of positive culture in young animal and 48% in adult). Sixty percent of cases had a positive culture. Incidence of septic arthritis will increase in the presence of *Mycoplasma* pneumonia and mastitis in a herd. Cattle affected by *Haemophilus somnus* as well as *Mycoplasma sp* may have more than one articulation infected. Arthritis was present in 25 of 54 calves with *Mycoplasma bovis* pneumonia in a feedlot.

Proximal joint sepsis like the elbow and shoulder for the thoracic limbs or the stifle and hip for the pelvic limb can be difficult to diagnose and treat. Although clinical signs will be similar (non weight bearing), wound or tumefaction is rather discreet. Those joints being rarely involved in cattle, they are often forgotten during the examination. Consequently, affected animals are often treated conservatively with stall rest and NSAIDs. Palpation of the synovial sacs, ligaments and flexion or extension of each joints are necessary to specify which of those joints are affected. At this point, arthrocentesis, radiographic images or ultrasound are used to confirm the diagnosis. If the joint is normal, fluid is not easy to collect from proximal joints. However, distension of the joint is helping except if fibrin is present.

**Arthrocentesis of the elbow, shoulder, stifle and hip**

For the elbow, the lateral collateral ligament is located first. Three sites can be used for arthrocentesis. Those sites will be used for joint lavage as well. Immediately cranial to the lateral collateral ligament with the needle aiming medially and caudally; Immediately caudal to the lateral collateral ligament with the needle aiming medially and cranially; needle inserted in the caudal pouch between the lateral epicondyle of the humerus and the olecranon with the needle directed cranio distally.
Figure 1: Arthrocentesis of the elbow in an adult cow

For the shoulder, the humeral tuberosity is located first. Two sites can be used for arthrocentesis. A spinal needle is used for this joint. A needle is inserted in the notch formed by the cranial and caudal portions of the lateral tuberosity with the needle aiming caudomedially; for the lateral approach a needle is inserted just cranial to the infraspinatus muscle, 1 cm proximal to the lateral tuberosity of the humerus.

Craniolateral approach  Lateral approach

Figure 2: Arthrocentesis of the shoulder in an adult cow

The stifle is formed of 3 compartments: the lateral and medial femorotibial joints and the femoropatellar joint. The medial femorotibial and the femoropatellar joints are always communicating in cattle. Only one of those 2 joints can be punctured for diagnostic purposes. The femoropatellar joint is aspirated by inserting a spinal needle between the middle and medial patellar ligaments with the needle directed proximally going between the patella and the trochlear ridges. It is easier to perform this arthrocentesis on an extended stifle with the animal laterally recumbent. The lateral and medial femorotibial joints are aspirated with a normal 18G 1 ½ inch needle. The needle is inserted closed to the collateral ligament with the needle directed caudo or crano medially (or laterally for the medial femorotibial joint). The lateral femorotibial joint can be aspirated and flushed through its digital extensors pouch just lateral to the tibial crest.
The coxofemoral joint is the most difficult joint to aspirate. The depth and the small volume of the joint make the window very small. As described in equine recently, ultrasound guided arthrocentesis improve the success of this manipulation. A spinal needle is essential for the centhesis of this joint. The needle is inserted just cranial to the greater trochanter. The needle is directed caudally and medially with an angle of 45° keeping the needle horizontal or slightly ventral. Using ultrasound guidance increases the successful placement of the needle.

Radiographic examination
Chronic presentation is frequent in food animal. For this reason, radiographic lesions are frequently obvious. The shoulder and the hip are difficult to realize on standing animals. In adult, hip radiographic views are challenging because the animal must be in dorsal recumbency.
Recently, Wenzinger described a technique of radiography on standing cattle. Although this technique was developed to evaluate hip injuries, it can be useful to rule out hip fracture and luxation.

Joint lavage and arthrotomy

The principle of joint lavage applies to proximal joints as well. However, it is difficult to get two spaced needle in the hip and shoulder. If one needle only is inserted, a tidal lavage is performed by successively pushing a solution, creating turbulence and draining the fluid with a 3-way valve. Those joints are difficult to lavage. It is better to do it well once because it is difficult to repeat it 1-2 days after because the joint is smaller and swollen. Arthroscopy is certainly useful and efficient although they are not the easiest joints to scope. Finally, arthrotomy is achievable and often necessary if fibrin is present in the joint. Like it is mentioned for through and through lavage, concentrates on the first lavage because it will be difficult the following days. Nuss reported that of the 17 cattle treated for septic arthritis of the shoulder and hip, 10 survived more than 6.5 months (median). Two of them were lame and had to be euthanized later.

In conclusion, proximal septic arthritis is challenging because of the difficulty to diagnose and access the joints. The use of ultrasound for guided arthrocentesis improve needle placement.

References: