CHAPTER FOUR

DISCUSSION

Many external and internal splints are used to immobilize fractures in goats, but only internal splints are usually suitable for femoral fractures.

The bony intramedullary pins such as bovine bony shuttle pins have been used for immobilization of the distal third fractures of the radius and tibia in goats (Shnain, Khalid and Markus, 1989; Kadhim, 1989).

The bony intramedullary pins such as bovine bony shuttle pins have been used for immobilization of mid-shaft femoral fractures in goats, but unfortunately they are not successful. Failure of this type of bony splint could be due to the strong muscular traction of the heavy muscle which makes the additional external splint not efficient. However the main possible cause of failure is the decalcification of the bony intramedullary pin at the fracture line as result of local inflammatory reaction which enhances decalcification (decrease in the pH at this area).

Some has found that the freeze-dried bone-plate allografts were eventually incorporated in the host bone (Malinin, Latta, Wanger and Brown, 1984), while others find that the absorbable osteosynthesis implants will lose their strength subcutaneously and intramedullary cavity of the femur (in vivo) faster.
than those in distilled water at 37°C (in vitro) in the rabbit,
(Vasenius, Vainiopaa, Vihtonen and Makela; 1990). Bone healing process
is influenced by many factors including mechanical stress and
biochemical stress. The mechanical stress is the most important factor
which is depends on, to use the suitable method for immobilization of
.fracture area (Mann and Payne, 1989

In this study, bony shuttle intramedullary pin splint (camel metacarpal
.bone) has been used instead of metallic splint

According to the present study this type of internal splint could be
recommended for the fixation of diaphyseal femoral fracture in goats
without any effect on the bone marrow. Because it is simple, easy to
apply and needs minimal postoperative care. There are no side effects as
those associated with the use of the metallic devices, because most of the
metallic fracture fixation devices need another operation to remove them
(and that will increase the cost of the operation, (Bostman, 1996

Resorption will occur during the remodeling period, because bony shuttle
pin splint acts as a bone implant (xenograft) which is used to
establishment and/or restoration of normal or maximal mechanical
.function with minimal compromise of biological function

The shuttle pin splint like the xenograft can be a source of calcium for
osteogenesis or bone formation and acts as weight-bearing support

placed in the cortical bone, (Johnson, 1991

Metallic devices also block the callus and new bone does not develop

from the avascular cortical ends (Anderson, 1965

Cost of the bony shuttle intramedullary pin splint, its availability, its

preparation and the simple sterilization methods should be taken into

consideration, because the sterilization of the bone graft is mostly

complicated and expensive in comparison with the other sterilization

methods of bone implants, like the use of ethylene oxide 84% at 22°C and

atmospheric pressure and stored at 0°C for 2 months (Johnson, Eurell and

(Schaeffer, 1992

Boiling or autoclaving is easier, inexpensive but might have little loss of

bone strength

Autoclaving have been used in sterilization of the bony shuttle pin splint

with little effect on its strength until the 7th time of sterilization
CONCLUSION AND RECOMMENDATIONS

Conclusion

The results of this study revealed the bony shuttle intramedullary pin splint (camel metacarpal bone) is good splint for immobilization of the diaphyseal femoral fractures in the goats without any detrimental effects on the bone marrow.

The bony shuttle intramedullary pin splint ((camel metacarpal bone)) is inexpensive and easily applied with minimal postoperative care and without need for splint removal like the metallic internal splints.

Recommendations

Further studies were needed to evaluate this splinter use in different animal species with special emphasis on debilitated animals and pathological fractures.
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