Bone is the most common implanted biological material after blood in blood transfusions. Although the market for bone graft substitutes is very strong, bone grafts are still very much in demand in medicine.

There are different types of bone grafts. A bone graft may be a fresh biological bone graft, a preserved bone graft or a synthetic bone replacement. Bone grafts can also be classified according to their origin. A graft harvested from one site and applied in that same patient in another site is an autograft. If the bone graft is harvested from one patient and given to another patient in that same species it is referred to as an allograft. A xenograft is tissue transferred between to individuals of different species. Bone grafts can be composed of cancellous or cortical bone or a combination of different tissue, such as bone and cartilage. In veterinary medicine fresh autogenous bone grafts are the most frequently used. They are generally composed of cancellous bone or crushed bone chips taken from the fracture site.

Bone grafts are most commonly used to augment fracture healing, treat osteomyelitis and to facilitate joint arthrodesis. In these circumstances the bone graft is used to stimulate new bone formation. This new bone is primarily formed through the function of osteoinduction or osteoconduction of the bone graft. In fresh autogenous grafts there is also a partial osteogenic effect. However few cells survive the bone graft transfer and therefore this effect is less important. Handling of the graft heavily influences the number of surviving cells during surgery.

Sites for obtaining autogenous cancellous bone grafts in ruminants can differ between ruminant species. Sites for obtaining cancellous bone in cattle are similar to the sites in horses. The cancellous bone can be obtained from the ilium, the sternum or the proximal portion of the tibia. In South American camelids however there are some anatomical differences that we need to keep in mind during bone grafting. The ilium is to small in camelids to obtain substantial quantities of cancellous bone. Bone grafts from the proximal part of the tibia may weaken the bone, predisposing it to a fracture. Therefore the sternum is the site in South American camelids to collect a cancellous bone graft.

For the collection of bone grafts the same general principles/guidelines apply in ruminants as in other species. Asepsis is a prerequisite for a successful bone graft application. The graft sites can be approached through a surgical incision and an opening into the bone is created with the help of bone rongeurs, trephines and bone drills. Bone curettes are used for the collection of the cancellous bone. The grafts should be stored in blood-soaked sponges since exposure to air and saline lessens the survival of cells. It has also been shown that exposure to antibiotics can be harmful to cells. The graft should be very loosely packed to help the nourishment of the graft once it is packed in the host site. Rigid internal fixation will also help a bone graft during fracture repair.

In conclusion, although bone grafting in ruminants is not as much reported or clearly defined as in some other species, once the understanding of the anatomical differences between species is kept in mind, the same basic principles of bone grafting can be applied.