Intrauterine autogenous foetal bone transplantation for the repair of cleft-like defects in the mid-gestational sheep model.

AIM: The success of intrauterine surgery in treating non-life-threatening malformations such as myelomeningocele, has also renewed strong interest in using this technique for treating craniofacial malformations. Nevertheless, the only experimental cleft-like defect models known, are those concerning wound healing of soft tissues.

MATERIAL AND METHODS: Attempts were made to repair artificial cleft-like defects including transplantation of 11 autogenous foetal bone grafts from the iliac crest or ulna, and were randomly assigned to three study groups, using the mid-gestational sheep model. In a 4th study group, lyophilized collagen, a bone-regenerating bioreabsorbable implant material, was used to fill the alveolar defect.

RESULTS: In all groups, there was a slight degree of asymmetry and thinning of the lip. Radiological studies demonstrated a variable degree of abnormality of the maxilla, ranging from none to a mild deviation. Three-dimensional computer tomography, two-dimensional maximal intensity projection findings, and histological analysis confirmed bony healing of the alveolar cleft-like defect.

DISCUSSION/CONCLUSION: Intrauterine autogenous foetal bone transplantation for the repair of cleft-like defects in the sheep is feasible. This is a reliable and
valuable model toward a possible clinical application for intrauterine treatment of clefts.