quantitatively confirmed that the distance between the alveolar ridge and the incisive foramen decreases and the angle from the horizontal plane of the alveolar bone increases following the loss of the incisors,

Accurate implant placement in the anterior maxilla is essential in achieving optimal prosthetic rehabilitation with proper function and acceptable aesthetic and phonetic demands. Bone resorbtion together with an enlarged incisive foramen can determinate the incisive foramen penetration through implant osteotomy. The anterior maxilla can be a critical region for the implants placement.

Artzi Z, Nemcosky CE, Bitlitum I, Segal P (2000) Displacement of the incisive foramen in conjunction with implant placemnent in the anterior maxilla without jeopardizing vitality of nasopalatine nerve and vessels: a novel surgical approach. Clinical Oral Implants Research 11(5):505-510.

Cavalcanti MG, Yang J, Ruprecht A, Vannier MW (2004) Accurate linear measurements in the anterior maxilla using orthoradially reformatted spiral computed tomography. Anat Embryol 208(4):265-271.

Nimigean V, Maru N, Nimigean VR (2004) Anatomie clinica si topografica a capului si gatului. Ed. Universitara „Carol Davila" – Bucuresti.

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Morphological aspects of human oocytes after cryopreservation

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Oocyte cryopreservation may represent a valid technique of gamete storage for women in need to preserve their reproductive potential. However, in general, oocyte cryopreservation protocols have not been fully optimized and overall clinical success remains quite low. Morphological studies, especially at ultrastructural level, may provide an important contribution in understanding the frequent failure of oocyte viability after cryopreservation. Thus, in order to evaluating the most common freeze-thawing procedures, we studied the ultrastructural characteristics of human preovulatory oocytes frozen/thawed (F/T) with different protocols.

All the oocytes were obtained from patients undergoing *in-vitro* fertilization (IVF) trials after their informed consent. The oocytes were fixed in glutaraldehyde at sampling and after freeze/thawing performed with cryoprotectants at different concentrations. Fresh human preovulatory oocytes were used as controls. The oocytes were processed for light and transmission electron microscopy (LM and TEM) observations.

By LM, both fresh and F/T oocytes appeared rounded, with an normal cytoplasm and a continuous zona pellucida (ZP). Cytoplasmic vacuolization was detected in some F/T oocytes. By TEM, organelles were uniformly dispersed in the ooplasm of fresh and F/T oocytes. Rounded mitochondria with typical cristae were found often associated with tubules and with small vesicles of smooth endoplasmic reticulum (SER), forming respectively mitochondria-SER aggregates and mitochondria-vesicle complexes. Metaphase II chromosomes were eccentrically located in the ooplasm. First polar body was regularly present in the perivitelline space. Cortical granules (CGs) were always present just beneath the oolemma in all the oocytes. Amount and density of CGs appeared abnormally reduced in F/T samples, irrespective of the type and concentration of cryoprotectant used. This was frequently associated with an increased density of the inner ZP. Finally, the presence of vacuolization from a slight to a moderate extent was confirmed by TEM analysis in the ooplasm of some F/T oocytes.

In conclusion, freeze/thawing procedures may generate fine ultrastructural alterations in specific oocyte cytoplasmic structures, presumably responsible for the reduced developmental potential of cryopreserved oocytes.

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