

## Bone reconstruction using neo-sternum from tissues adjacent to the surgical wound

### *Reconstrucción ósea con neoesternón a partir de tejidos adyacentes a la herida quirúrgica*

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Longitudinal median sternotomy is the incision that offers the best exposure of the anterior mediastinal structures. When sternum dehiscence occurs, due to infections or healing-delaying factors, it gets prolonged and complicated, also due to the constant respiratory movement. Plastic surgery with extensive tissue removal –even from other cavities such as the abdomen– is required to repair it; and often, aesthetic results leave a lot to be desired. We have created a new sternum from the dermis adjacent to the surgical wound, avoiding tissue removal, which offers an excellent cosmetic outlook, in addition to being an autologous biological substitute. It is a novel proposal that uses a reproducible and economical technique for sternal or anterior chest wall synthesis; being actually cost-free since its raw material is provided by the patient himself. Healing requires

stem cells, which thrive everywhere in all layers of the skin. There are mesenchymal cells, specifically in the dermis, that are able to differentiate into bone, cartilage or muscle; and this is where our idea came from.

In view of recurrent sternum dehiscence in a non-septic context, due to poor bone quality, delayed scarring or total or partial loss related to infected sternum (osteomyelitis or mediastinitis) after removing the infection and achieving good granulation tissue, we proceed to closure. An incision is made parallel to the edge of the prior open wound, deep to the costal margin (**Panel A**), then the epidermis of the previous wound is thoroughly removed with the scalpel tip, leaving only the dermis (**Panel B**), then a U-shaped or running suture is performed (**Panel C**), depending on the skin tension, to hold both edges together, closing the space over the poor quality or absent sternal bone (**Panel D**). "Slip-sliding" techniques could be used and, on this layer, the subcutaneous cellular tissue remaining in the new incision and the skin, are subsequently closed. While healing, this dermis produces a fibrosis that seems to ossify over the sternum re-

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mains, and generates what we call biological neo-sternum, thanks to the action of the stem cells that

exist in the dermis and those residing at the very edges of the sternum remains.

