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

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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, 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.

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 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.