Tantalum became the preferred cranioplasty material for more than 1000 procedures performed during World War II. In fact, its use was rapidly adopted in the civilian population. During World War II and the heyday of tantalum cranioplasty, there was a rapid evolution in prosthesis implantation and fixation techniques significantly shaping how cranioplasties are performed today. Several years after the war, acrylic emerged as the cranioplasty material of choice. It had several clear advantages over its metallic counterparts. Titanium, which was less radiopaque and had a more optimal thermal conductivity profile (less thermally conductive), eventually supplanted tantalum as the most common metallic cranioplasty material. While tantalum cranioplasty was popular for only a decade, it represented a significant breakthrough in synthetic cranioplasty. The experiences of wartime neurosurgeons with tantalum cranioplasty played a pivotal role in the evolution of modern cranioplasty techniques and ultimately led to a heightened understanding of the necessary attributes of an ideal synthetic cranioplasty material. Indeed, the history of tantalum cranioplasty serves as a model for innovative thinking and adaptive technology development [1)].

1)
Flanigan P, Kshettry VR, Benzel EC. World War II, tantalum, and the evolution of modern cranioplasty technique. Neurosurg Focus. 2014 Apr;36(4):E22. doi: 10.3171/2014.2.FOCUS13552. PubMed PMID: 24684335.