Percutaneous Reduction of an Isolated Zygomatic Fracture Using a Stainless Steel Wire: A Case Report

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Surgical reduction of a zygoma fracture was given by Duverney in 1751.¹ Both intraoral and extraoral methods have become common place.² The transoral approach was popularized by Keen in 1909, with later modifications by Goldthwaite and Quinn. These techniques offer advantages of avoiding any skin incision and visible scarring. They also allow for minimal dissection and an excellent vector for reduction.³ ⁴

Technique
The area is draped, leaving the eye, ear, and oral cavity exposed for orientation. The malar prominence, the arch, and the corresponding fractured area are outlined on the skin with a marking pen (Figure 1). The areas immediately superior and inferior to the fracture site are palpated, but no local anesthetic injected. A 26-gauge stainless steel wire is then passed through the skin just below the zygomatic arch (Figure 2). The curved awl along with the wire is passed under the zygomatic arch from below, exiting through the skin above the arch (Figure 3). The depth of the fractured arch is easily reached using the tip of the curved needle. The wire is then passed under the fragments, tightened, and latched into the correct position while the patient’s head is stabilized. The fragments will reduce in an appropriate position, followed by a click. The symmetry of the arch and the esthetic result are checked, as in some cases fragments may relapse, either immediately or later. To avoid this, we latch the wires onto a protective finger splint. Finally, two circumferential wires that were previously around the zygomatic arch are tied over a short piece of a finger splint on the skin over the fracture. The patient has a post-operative

Figure 1: The malar prominence, the arch and the corresponding fractured area outlined with a marking pen on the skin

Figure 2: 26-gauge stainless steel wire passed through the skin just below the zygomatic arch
radiograph showing the arch in the proper position, and the splint and wire is removed after 2 weeks. A follow-up submento-vertex view shows the proper position of zygoma (Figure 4).

The stainless steel wire method is quick, simple, and effective for the reduction of isolated, depressed fractures of the zygomatic arch. The technique is minimally invasive and leaves no scarring. However, excessive tension on the wire may lead to necrosis of the skin at the margins of the eye shield or an obvious scar. The technique is not influenced by the swelling of the overlying soft tissue, and there is little or no risk of infection or neurovascular injury. It is indicated for isolated fractures of the zygomatic arch. However, may also be used for comminuted fractures.

**Points to Ponder**

- The surgeon can move the wires laterally to reduce the medially displaced fracture, and medially to obtain a satisfactory position. It is most effective if done within 4 or 5 days of the injury
- It is easy to do and does not require an experienced surgeon; it may also be done under local anesthesia, with or without sedation, in the emergency department or clinic. It provides excellent reduction with fewer complications than other techniques.

**REFERENCES**


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