HYDROXYLAPATITE ASSEMBLIES
Wehrs indirect (inverted-L) malleus-stapes assembly prosthesis. Dense hydroxylapatite ceramic (Gyrus-Olympus, Memphis, 1990).
Wehrs indirect malleus-footplate model (Gyrus-Olympus, Memphis).
Refinement of the Wehrs design (Lenis, 1991). The "shoulder" became prominent if the device was angled, causing an extrusion risk over the pressure point.
Dornhoffer indirect (inverted-L) assembly prosthesis models. These can also be used as columellas, in the absence of a suitable malleus handle.
Black Spanner prosthesis, as supplied. The shaft can be cut with a scalpel to suit either the malleus-stapes or the malleus-footplate roles.
Spanner assembly prosthesis, demonstrating the alternative shaft usage for the malleus-stapes/footplate roles.
Spanner prosthesis. Alternative malleus-stapes (left) and malleus-footplate (right) employment models.
Spanner malleus-stapes siting plan.
Spanner malleus-footplate siting plan.
Spanner malleus-stapes prosthesis in situ. Temporal bone demonstration, Hopkins rod view, Rt ear.
Spanner malleus-footplate prosthesis in position, Rt ear. Hopkins rod technique, temporal bone demonstration.
Spanner malleus-stapes prosthesis positioning. 1. Length measurement. 2. The head is engaged on to the malleus handle. 3. Final status after the cap is sited on the stapes.
Spanner malleus-stapes implantation technique. The device shaft is grasped such that when released, the siting is exact.
Engaging the jaws of the HA head under the malleus. This is lifted to allow siting on the stapes head.
Spanner implantation: final prosthetic position. The malleus-stapes angle should not exceed 45°, as transmission forces will dissipate, reducing the audiological effect.
Spanner in situ, optimal direct transmission situation.
Detail of the previous frame. Disease-free ear. Complete air-bone gap elimination is expected in these direct transmission circumstances.
Spanner malleus-stapes assembly two years after implantation. The device is covered with a fine epithelial layer and fixed in position.

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Use of cartilage composite grafts to guard a Spanner prosthesis. The graft edge is thinned and laid on the malleus handle. Used in drum collapse cases.
Spanner prosthesis in situ. The lateral jaw of the HA head is seen under the mid-handle. Aged patient, somewhat opaque pars tensa.
Spanner malleus-footplate assembly. The HA head is clearly evident deep to the drum and handle. The longer MFA shaft is seen in the deeper mesotympanum.
Direct Spanner MSA reconstruction, post ICW surgery. The jaws of the HA head are directly aligned deep to the handle. Cartilage attic defect closure.
Spanner head, immediately deep to the drum, Lt ear.
Coronal CT view.
Spanner MSA, Lt ear. The head and shaft are clearly discerned between the malleus handle and stapes superstructure.
Dislocated malleus handle. A spanner MFA has forced the handle anteriorly, distorting the drum and reducing the audiological result.
Gross tubal insufficiency after a Spanner ossiculoplasty. There is severe long term drum collapse after prolonged tubal failure over several years.
Widespread major drum collapse secondary to chronic tubal failure. A Spanner prosthesis has toppled, becoming disarticulated. The fate of the shaft is uncertain.
Drum dehiscence over a Spanner head with an active extrusion process developing. Case of Rt past temporal bone fracture (defect posteriorly).
Marked drum collapse and “exclusion” of a Spanner MSA by enveloping drum epithelium. Possible early cholesteatoma formation.
Drum collapse and breakdown over a Spanner MFA. Prior open cavity surgery and long term Eustachian failure.
Spanner MSA extrusion. Deep EAC exostoses. The drum appears to have healed spontaneously.

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