

Anterior atlantoaxial transarticular retropharyngeal screw fixation

Background

Traumatic atlantoaxial instability is usually treated with posterior C1-2 instrumentation techniques (Harms or Magerl technique), which are accepted as standard methods of treatment. Although retropharyngeal approach for anterior transarticular C1/2 fixation was described many years ago, this way of stabilisation is not widely adopted. From the biomechanical point of view, the immediate stability and fusion rate are referred to be similar to the posterior instrumentation. There were slightly different techniques described—with two short screws, two long screws, trajectory perpendicular to the C1/2 joint, or slightly oblique, or three screws where central one is direct odontoid peg screw. Is it only a salvage procedure to failed C2 dens axis direct instrumentation or a regular surgical option? We present our cases and add a review of literature

Methods

We retrospectively enrolled patients with dens axis fracture and atlantoaxial subluxation. Anterior transarticular screw fixation was performed with anteroposterior open-mouth and lateral intraoperative radiographs, using the retropharyngeal K-wire technique as the standard C2 dens direct osteosynthesis. We present patients with short double screw, long screw, and triple screw techniques. The dens fracture was classified according to d'Alonzo, C1/2 luxation was described with Fieldings classification. Patients were evaluated by X-rays and CT scan at follow-up to identify bone fusion. We obtained classification forms for neurological status, pain, and post-op satisfaction. Differences between long, short, double, or triple screw techniques are shown.

Discussion

Anterior atlantoaxial transarticular fixation is an effective and safe technique, although it is not widely known. This procedure offers some advantages over posterior approaches. It is a treatment option for carefully selected patients (extreme obesity, polymobidity, ...), not only the rare or “salvage” technique. The question of long or short, double, or triple screw technique remains unanswered, although “standardised” are two screws.