# Posterior C1-C2 Fusion

Posterior C1-C2 fusion is a surgical procedure aimed at stabilizing the atlantoaxial complex (C1-C2). It is commonly performed for conditions such as atlantoaxial instability, traumatic fractures, rheumatoid arthritis, congenital anomalies, or tumors affecting the C1-C2 region.

## Indications

- Atlantoaxial instability (e.g., rheumatoid arthritis, congenital anomalies).

- Odontoid fractures (Type II or unstable Type III fractures)

- Atlanto-axial subluxation

- Post-traumatic instability

- Neoplasms affecting C1-C2

- Post-infectious or inflammatory conditions (e.g., Grisel syndrome)

## Surgical Techniques

Several techniques exist for posterior C1-C2 fusion, with the most common being:

1. Magerl Technique.

2. Harms Technique

3. Gallie Fusion

4. Brooks-Jenkins Fusion.

5. Goel-Harms Fusion

### **Complications** - **Vertebral artery injury** (especially in transarticular screw techniques) - **Neurological injury** (spinal cord or nerve root damage) - **Hardware failure** (screw loosening, rod breakage) - **Nonunion** (fusion failure) - **Infection** (deep wound infection, osteomyelitis)

### **Outcomes** - High fusion rates (>90%) with modern techniques. - Postoperative bracing is often unnecessary with screw-rod constructs. - Improved stability and pain relief.