PREOPERATIVE DIAGNOSIS: , Fracture dislocation, C2.,POSTOPERATIVE DIAGNOSIS: ,Fracture dislocation, C2.,OPERATION PERFORMED,1. Open reduction and internal fixation (ORIF) of comminuted C2 fracture.,2. Posterior spinal instrumentation C1-C3, using Synthes system.,3. Posterior cervical fusion C1-C3.,4. Insertion of morselized allograft at C1to C3.,ANESTHESIA:, GETA.,ESTIMATED BLOOD LOSS:, 100 mL.,COMPLICATIONS: , None.,DRAINS: , Hemovac x1.,Spinal cord monitoring is stable throughout the entire case.,DISPOSITION:, Vital signs are stable, extubated and taken back to the ICU in a satisfactory and stable condition.,INDICATIONS FOR OPERATION:, The patient is a middle-aged female, who has had a significantly displaced C2 comminuted fracture. This is secondary to a motor vehicle accident and it was translated appropriately 1 cm. Risks and benefits have been conferred with the patient as well as the family, they wish to proceed. The patient was taken to the operating room for a C1-C3 posterior cervical fusion, instrumentation, open reduction and internal fixation.,OPERATION IN DETAIL: , After appropriate consent was obtained from the patient, the patient was wheeled back to the operating theater room #5. The patient was placed in the usual supine position and intubated and under general anesthesia without any difficulties. Spinal cord monitoring was induced. No changes were seen from the beginning to the end of the case.,Mayfield tongues were placed appropriately. This was placed in line with the pinna of the ear as well as a cm

above the tip of the earlobes. The patient was subsequently rolled onto the fluoroscopic OSI table in the usual prone position with chest rolls. The patient's Mayfield tongue was fixated in the usual standard fashion. The patient was subsequently prepped and draped in the usual sterile fashion. Midline incision was extended from the base of the skull down to the C4 spinous process. Full thickness skin fascia developed. The fascia was incised at midline and the posterior elements at C1, C2, C3, as well as the inferior aspect of the occiput was exposed. Intraoperative x-ray confirmed the level to be C2.,Translaminar screws were placed at C2 bilaterally. Trajectory was completed with a hand drill and sounded in all four quadrants to make sure there was no violation of pedicles and once this was done, two 3.5 mm translaminar screws were placed bilaterally at C2. Good placement was seen both in the AP and lateral planes using fluoroscopy. Facet screws were then placed at C3. Using standard technique of Magerl, starting in the inferomedial quadrant 14 mm trajectories in the 25-degree caudad-cephalad direction as well as 25 degrees in the medial lateral direction was made. This was subsequently sounded in all four quadrants to make sure that there is no elevation of the trajectory. A 14 x 3.5 mm screws were then placed appropriately. Lateral masteries at C1 endplate were placed appropriately. The medial and lateral borders were demarcated with a Penfield. The great occipital nerve was retracted out the way. Starting point was made with a high-speed power bur and midline and lateral mass bilaterally.

Using a 20-degree caudad-cephalad trajectory as well as 10-degree lateral-to-medial direction, the trajectory was completed in 8 mm increments, this was subsequently sounded in all four quadrants to make sure that there was no violation of the pedicle wall of the trajectory. Once this was done, 24 x 3.5 mm smooth Schanz screws were placed appropriately. Precontoured titanium rods were then placed between the screws at the C1, C2, C3 and casts were placed appropriately. Once this was done, all end caps were appropriately torqued. This completed the open reduction and internal fixation of the C2 fracture, which showed perfect alignment. It must be noted that the reduction was partially performed on the table using lateral fluoroscopy prior to the instrumentation, almost reducing the posterior vertebral margin of the odontoid fracture with the base of the C2 access. Once the screws were torqued bilaterally, good alignment was seen both in the AP and lateral planes using fluoroscopy, this completed instrumentation as well as open reduction and internal fixation of C2. The cervical fusion was completed by decorticating the posterior elements of C1, C2, and C3. Once this was done, the morselized allograft 30 mL of cortical cancellous bone chips with 10 mL of demineralized bone matrix was placed over the decorticated elements. The fascia was closed using interrupted #1 Vicryl suture figure-of-8. Superficial drain was placed appropriately. Good alignment of the instrumentation as well as of the fracture was seen both in the AP and lateral planes. The subcutaneous tissues were closed using a #2-0 Vicryl suture. The dermal

edges were approximated using staples. The wound was then dressed sterilely using Bacitracin ointment, Xeroform, 4x4s, and tape, and the drain was connected appropriately. The patient was subsequently released with a Mayfield contraption and rolled on to the stretcher in the usual supine position. Mayfield tongues were subsequently released. No significant bleeding was appreciated. The patient was subsequently extubated uneventfully and taken back to the recovery room in satisfactory and stable condition. No complications arose.