

Appendix. Details of the Wrong-Site Surgery Cases in Table IX

Wrong-Site Regional or Local Anesthesia

One case involving injection of the wrong knee with local anesthetic was classified by the surgeon as wrong-site arthroscopic surgery; the error was discovered before the incision was made. In another case, a patient with a patellar fracture received a nerve block in the wrong limb; this error was discovered, the correct limb was blocked, and the correct surgical procedure was performed.

Wrong-Site Incision or Exposure

In nine reported cases (six hand, one foot, one hip, and one spine), a skin incision was made at the wrong site, the error was discovered before the site was exposed, and the correct surgical procedure was performed. One of these patients had three procedures planned for the same hand (excision of a volar carpal ganglion, excision of a volar retinacular cyst of the long finger, and injection of a Dupuytren nodule on the ring finger); a skin incision was made on the ring finger, the error was recognized, and the appropriate procedures were performed.

In five additional cases, the operative site was exposed before the surgeon discovered that the procedure was being performed on the wrong side of the body (one hip), the wrong side of the spine (three cases), or the wrong level of the spine (one case). One surgeon reported beginning a laminotomy on the wrong side while waiting for the intraoperative localizer radiograph to be processed.

Incomplete Operation(s)

In two cases (one hand and one foot) in which two procedures had been planned, the surgeon performed only one of the planned procedures. One patient gave consent for two trigger fingers to be released but the surgeon released only one trigger finger; no information was provided regarding when the error was noticed and whether the second trigger finger was released. One patient who gave consent for both a hallux valgus and a bunionette correction underwent only the hallux valgus correction; the error was noted immediately postoperatively, and the patient returned to the operating room for the bunionette correction during a second anesthetic session.

Wrong Procedure

In four cases (three hands and one foot), the surgeon performed a procedure on a different known site of pathology, one for which the patient had not given consent, rather than the planned procedure. One patient had both de Quervain tenosynovitis and a trigger thumb; trigger thumb release was planned, but a first dorsal compartment release was performed; when the error was realized, the trigger thumb was released during the same anesthetic session. One patient had two trigger fingers and consented for the ring finger to be released, but the long finger was released instead; the ring finger was released at a

later date. One patient had masses on tendons of both the long and the ring finger, and gave consent for excision of the long finger mass; the ring finger mass was removed instead, the error was discovered while the patient was still under anesthesia, and the long finger tendon mass was also removed. One patient had bilateral peroneal tendon tears but only one was symptomatic; the asymptomatic side was repaired, and the symptomatic side was repaired during a separate anesthetic session.

Three patients had the wrong procedure performed on the correct side. One underwent a medial epicondylectomy instead of a lateral epicondylectomy, and a second underwent the opposite. In both cases, the error was discovered and the correct procedure was performed during the same anesthetic session. The third patient had a posterior sternoclavicular dislocation, and the first rib was plated to the sternum instead of to the clavicle. The error was discovered and corrected during a separate anesthetic session.

Wrong Side

Seven patients had the intended procedure performed on the wrong side. One procedure was a carpal tunnel release; no information was provided regarding whether the procedure was also performed on the correct side. One patient with multiple lower-extremity fractures had a traction pin inserted in the wrong side; when the error was discovered, the pin was removed and placed in the correct side, although it was not noted whether this occurred during the same anesthetic session or a subsequent one. Five patients underwent arthroscopy of the wrong knee; in three cases the error was discovered after insertion of the arthroscope but before any additional procedures were performed (in one case, the correct side underwent chondroplasty and microfracture for an osteochondral defect during the same anesthetic session; in the second, the correct side was arthroscopically examined during the same anesthetic session; and in the third, the planned medial plica excision was performed on the correct side during the same anesthetic session). No additional information was provided regarding the fourth patient. The fifth patient underwent medial meniscectomy and medial femoral condyle chondroplasty on the wrong side; no additional information was provided about this case.

Wrong Digit(s)

Three patients had the intended procedure performed on the wrong digit(s). One patient had the wrong distal interphalangeal finger joint immobilized with a Kirschner wire; no additional information was provided about this case. For the second patient, fusion of the third, fourth, and fifth tarsometatarsal joints was planned, but the second was inadvertently also fused. The third patient underwent the only wrong-site amputation in the ABOS database; the procedure planned was amputation of the fourth toe due to diabetic osteomyelitis, but both the third and the fourth toe were amputated.

Wrong Level of Spine

Twenty-six cases were reported in which either the patient underwent wrong-level spine surgery that included an actual procedure at the wrong level (as opposed to exposure of the wrong level as mentioned above) or it was not mentioned whether an actual procedure was performed at the wrong level. The region of the spine affected was cervical in eight cases, thoracic in two, lumbar in fourteen, and unspecified in two.

The surgeon noted the possible reason for the wrong-level surgery in twelve reports. Eleven reports cited incorrect interpretation of intraoperative radiographs; three of these were attributed to incorrect counting of levels by the surgeon, two were attributed to morbid obesity of the patient (presumably making imaging difficult), and one to congenital vertebral anomalies. The twelfth report cited unrecognized movement of the retractor when the patient required repositioning for respiratory difficulty after the surgeon had identified the appropriate level on an intraoperative radiograph.

In three cases (two lumbar and one unspecified) the report stated “wrong spine level” but provided no further details about the procedure that was performed at the wrong level. In one cervical case the report stated that the error was noted and the correct operation was performed during the same anesthetic session but did not note what procedure was performed at the wrong level.

In six cases the report stated that the wrong level was “entered” (two cases) or that a laminotomy was performed and the wrong level was explored (four cases); in all six of these cases, the error was discovered and the correct procedure was performed during the same anesthetic session.

In six cases (one cervical and five lumbar) the report indicated that the wrong level was decompressed; three of these errors were recognized and the correct level was decompressed during the same anesthetic session. Two others were recognized later, and the correct procedure was performed during a second anesthetic session. The sixth patient underwent wrong-level decompression (at a level where the disk was protruding but was not the cause of the neuropathy) and subsequently had worsening of the cauda equina syndrome, but the fact that the wrong level had been decompressed went unrecognized; when the problem was recognized after a second operation, a third operation was required to decompress the correct level. This patient gradually improved postoperatively, with nearly complete resolution of the cauda equina syndrome.

In the remaining ten cases the wrong spine level was fused. Six of these cases involved the cervical spine. In one case, a posterior cervical fusion of C5-C6 was performed instead of C4-C5, and the correct level was fused during a subsequent anesthetic session. The remaining five errors involving the cervical spine occurred during anterior fusion. The first of these patients underwent posterior decompression and fusion of C6-T1 and an anterior C7 corpectomy was planned, but a C6 corpectomy was performed instead; the error was recognized intraoperatively and a C7 corpectomy was also performed. In the second case, an anterior fusion of C4-C5 was performed instead of

C5-C6; the error was discovered intraoperatively and C5-C6 was also fused. In the third case, an anterior fusion of C5-C6 was performed instead of C4-C5; the surgeon did not specify when this was discovered and whether another operation was performed. In the fourth and fifth cases, fusion of C5-C7 was planned but fusion of C6-T1 was inadvertently performed instead; in one of these cases the error was discovered intraoperatively and C5-C6 was also fused, and in the other case it was discovered postoperatively and the surgeon did not specify whether additional surgery was performed. In one posterior thoracic fusion, the surgeon described “errant pedicle screw placement at the superior end of the construct” but did not describe whether this was corrected, and in another case the surgeon fused T1-T12 instead of T2-L1; the error was discovered intraoperatively and L1 was added to the fusion during the same anesthetic session. In two cases involving degenerative lumbar spondylolysis and stenosis, decompression and fusion were performed one level too high (L3-L4 instead of L4-L5 in one case, and not specified in the other case). In one of these cases the error was recognized intraoperatively and the correct level was also decompressed and fused. In the other case, the error was noted on a postoperative computed tomography scan performed for persistent symptoms, and the correct level was decompressed and fused during a subsequent anesthetic session; this patient had persistent increased lower-extremity weakness postoperatively.