Intraabdominal injuries

Diagnostic peritoneal lavage (DPL) looking for bloody fluid or FAST (focused abdominal sonogram for trauma) are often used by trauma surgeons to assess for intra-abdominal hemorrhage. If negative and the patient is hemodynamically stable, the patient should be taken for cranial CT (with DPL– if the initial fluid is not bloody, the remainder of the lavage fluid may be collected for quantitative analysis as the head CT is being done).

Patients with grossly positive DPLor positive FAST and/or hemodynamic instability may need to be rushed to the O.R. for emergent laparotomy by trauma surgeons without benefit of cerebral CT. Neurosurgical management is difficult in these patients, and must be individualized. These guidelines are offered:

CAUTION: many patients with severe trauma may be in DIC (either due to systemic injuries, or directly related to severe head injury possibly because the brain is rich in thromboplastin [1]). Operating on patients in DIC is usually disastrous. At the least, check a PT/INR/PTT

1. if GCS > 8 (which implies at least localizing)

a) operative neurosurgical intervention is probably not required

b) utilize good neuroanesthesia techniques (elevate head of bed, judicious administration of IV fluids, avoiding prophylactic hyperventilation…)

c) obtain a head CT scan immediately post-op

2. if patient has focal neurologic deficit, an exploratory burr-hole should be placed in the O.R. simultaneously with the treatment of other injuries. Placement is guided by the pre-op deficit

3. if there is severe head injury (GCS ≤ 8) without localizing signs, or if initial burr hole is negative, or if there is no pre-op neuro exam, then

a) measure the ICP: insert a ventriculostomy catheter (if the lateral ventricle cannot be entered after 3 passes, it may be completely compressed or it may be displaced, and an intraparenchymal fiber-optic monitor or subarachnoid bolt should be used)

● normal ICP: unlikely that a surgical lesion exists.Manage ICP medically and, if a IVC was inserted, with CSF drainage

● elevated ICP (≥20 mm Hg): inject 3–4 cc of air into ventricles through IVC, then obtain portable intraoperative AP skull x-ray (intra-operative pneumoencephalogram) to determine if there is any midline shift. If there is mass e ect with ≥5 mm of midline shift is explored [2] with burr-hole(s) on the side opposite the direction of shift. If no mass effect, intracranial hypertension is managed medically and with CSF drainage

b) routine use of exploratory burr holes for children with GCS=3 has been found not to be justified [3].

1)
Kaufman HH, Hui K-S, Mattson JC, et al. Clinicopa- thological Correlations of Disseminated Intravascular Coagulation in Patients with Head Injury. Neurosurgery. 1984; 15:34–42
2)

Becker DP, Miller JD, Ward JD, et al. The Outcome from Severe Head Injury with Early Diagnosis and Intensive Management. J Neurosurg. 1977; 47:491–54
3)
Johnson DL, Duma C, Sivit C. The Role of Immediate Operative Intervention in Severely Head-Injured Children with a Glasgow Coma Scale Score of 3. Neurosurgery. 1992; 30:320–324