UROGENITAL TRAUMA

American Association for the Surgery of Trauma Organ Injury Scale I: spleen, liver, and kidney, validation based on the National Trauma Data Bank

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Background: This study attempts to validate the American Association for the Surgery of Trauma (AAST) Organ Injury Scale (OIS) for spleen, liver, and kidney injuries using the National Trauma Data Bank (NTDB).
Study Design: All NTDB entries with Abbreviated Injury Scale codes for spleen, liver, and kidney were classified by OIS grade. Injuries were stratified either as an isolated intraabdominal organ injury or in combination with other abdominal injuries. Isolated abdominal solid organ injuries were additionally stratified by presence of severe head injury and survival past 24 hours. The patients in each grading category were analyzed for mortality, operative rate, hospital length of stay, ICU length of stay, and charges incurred.
Results: There were 54,148 NTDB entries (2.7%) with Abbreviated Injury Scale-coded injuries to the spleen, liver, or kidney. In 35,897, this was an isolated abdominal solid organ injury. For patients in which the solid organ in question was not the sole abdominal injury, a statistically significant increase ($p < or = 0.05$) in mortality, organ-specific operative rate, and hospital charges was associated with increasing OIS grade; the exception was grade VI hepatic injuries. Hospital and ICU lengths of stay did not show substantial increase with increasing OIS grade. When isolated organ injuries were examined, there were statistically significant increases ($p < or = 0.05$) in all outcomes variables corresponding with increasing OIS grade. Severe head injury appears to influence mortality, but none of the other outcomes variables. Patients with other intraabdominal injuries had comparable quantitative outcomes results with the isolated abdominal organ injury groups for all OIS grades.
Conclusions: This study validates and quantifies outcomes reflective of increasing injury severity associated with increasing OIS grades for specific solid organ injuries alone, and in combination with other abdominal injuries.

Editorial Comment

The original AAST classification schema for traumatic renal injuries was published back in 1989 in the Journal of Trauma.(1) The sub-classification of the injuries into grades I - IV were mostly based on expert opinion and poorly constructed retrospective analyses. Despite such poor Oxford Level of Evidence of support for the classification schema, it has stood the test of time. The above paper by Tinkoff et al. is based on Nation Trauma Data Bank (NTDB) V.5.0 and Kuan et al. (2) based on NTBD V.4.0 came to the same conclusions as the reproducible validity of the scaling. The strength of the NTDB is that it is a large repository of trauma data from 405 trauma centers from across the US. Such pooling of data results in large numbers and the power to make statistically significant conclusions. As the standard of care for blunt Grade 1-IV renal injuries is nonoperative and isolated low grade penetrating injuries also trending to nonoperative, it is not surprising that NTDB data shows that 90. 9 % of all renal injuries can be safely managed non-operatively. Furthermore, patients with isolated kidney injuries, where severe traumatic brain injuries and deaths < 24 hours from arrival at the ED were excluded from study showed an incremental and statistically significant increase across all parameters from Grade I and II to Grade V - such as in mortality (1.5% to 10.7%), surgical exploration (4% to 73.3%), length of hospitalization (8.0 to 16.8 days) to ICU days (3.2 to 8.5 days). Another interesting finding was the economics of solid organ injuries. Hospital charges for solid organ injury were remarkably similar for liver, spleen and kidney. Average overall hospital charges are $72, 263 - $75,781. With isolated kidney injuries, the charges were about $6000 per day.

References
1. Moore EE, Shackford SR, Pachter HL, McAninch JW, Browner BD, Champion HR, et al.: Organ injury scaling: spleen, liver, and kidney. J Trauma. 1989; 29: 1664-6.
2. Kuan JK, Wright JL, Nathens AB, Rivara FP, Wessells H; American Association for the Surgery of Trauma: American Association for the Surgery of Trauma Organ Injury Scale for kidney injuries predicts nephrectomy, dialysis, and death in patients with blunt injury and nephrectomy for penetrating injuries. J Trauma. 2006; 60: 351-6.

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Analysis of urologic complications after radical hysterectomy

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Objective: Injuries of the ureter or bladder or development of vesicovaginal and ureterovaginal fistulas are the most serious complications in gynecological surgery.
Study Design: This study included 536 women who underwent radical hysterectomy because of invasive cancer of the cervix uteri.
Results: During the surgery the ureter was injured in 1.32% of cases, whereas the percentage of bladder injuries was 1.49. In the early postoperative period vesicovaginal or ureterovaginal fistulas appeared in 2.61% and 2.43% of cases, respectively.
Conclusion: The stage of the disease, obesity, diabetes, and postoperative surgical infection acted as predisposing factors of the urinary tract complications.

Editorial Comment

Lower urinary tract injury during gynecologic surgery is relatively uncommon. Bladder injuries are the predominant iatrogenic urologic injury. Bladder injuries are usually recognized and repaired immediately, and potential complications are typically minor. Ureteral injuries, however, are typically recognized in a delayed fashion and have the potential to be life threatening, or result in permanent kidney damage or nephrectomy.

Iatrogenic ureteral injuries are a potential complication of any open or endoscopic pelvic operation. Gynecologic surgery accounts for roughly 75% of all iatrogenic ureteral injuries, with the remaining occurring during colorectal, general, vascular, and urologic surgery. The ureter is injured in roughly 0.5-2% of all hysterectomies and routine gynecologic pelvic operations and in about 2-10% of all radical hysterectomies. Likic et al. report a lower rate of ureteral injury of only 1.32%, but this reported decline over the years is due to improved patient selection, surgery limitation to mostly low-stage disease, decreased use of preoperative radiation, and modifications in surgical technique that limit extreme skeletonization of the ureter. Of iatrogenic ureteral injuries from gynecologic surgery, roughly 50% are from radical hysterectomy, 40% from abdominal hysterectomy, and < 5% from vaginal hysterectomy. All gynecologic ureteral injuries occur to the distal third of the ureter. Ureteral injuries during laparoscopic gynecologic surgeries typically occur during laser ablative endometriosis surgery or laparoscopic assisted vaginal hysterectomy. In gynecologic surgery, bladder injury most commonly occurs during abdominal hysterectomy. The bladder can be injured at four specific sites, on incising the parietal peritoneum, entering the vesicouterine fold, separating the bladder from the uterine fundus,

cervix, or upper vagina, entering the anterior vagina, or on mobilizing or suturing the vaginal vault. If a bladder injury is noted at this time, it can usually be easily managed by a 2 or 3 layer closure. Retrograde bladder filling with blue colored saline facilitates bladder injury diagnosis. Undiagnosed intraoperative injuries to the bladder typically present days to weeks after surgery. In patients with prior pelvic irradiation, fistulas can present months to even years after hysterectomy.

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PATHOLOGY

Renal cell carcinomas with papillary architecture and clear cell components: the utility of immunohistochemical and cytogenetical analyses in differential diagnosis

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Although histologic features enable an accurate diagnosis in most renal carcinomas, overlapping morphologic findings between some renal neoplasms make subclassification difficult. Some renal carcinomas show papillary architecture but are composed extensively of cells with clear cytoplasm, and it is unclear whether they should be classified as clear cell renal cell carcinomas or papillary renal cell carcinomas. We analyzed the immunohistochemical profiles and the cytogenetic patterns of 14 renal carcinomas showing papillary architecture in which there were variable amounts of cells with clear cytoplasm. The patients were 8 women and 6 men (mean age: 54 y). Immunohistochemistry and fluorescence in situ hybridization analysis distinguished 2 different groups. The first consisted of 10 renal cell carcinomas with strong immunoreactivity for alpha-methyl coenzyme A racemase, of which 9 also expressed cytokeratin 7. All of these neoplasms showed gains of chromosome 7 or 17 and chromosome Y was lost in all the male patients whereas 3p deletion was detected only in one case. In the other 4 renal cell carcinomas, cytokeratin 7 was not detected and alpha-methylacyl-CoA racemase was positive in only 1. In these neoplasms, no gain of chromosome 7 or 17 and no loss of chromosome Y were observed, whereas 3p deletion was detected in 3 of them. None of the 14 neoplasms showed immunoreactivity for TFE3. The combined use of immunohistochemistry and cytogenetics enabled us to provide a definitive diagnosis for 12 of 14 renal cell carcinomas with papillary architecture and clear cell components: 9 cases were confirmed to be papillary renal cell carcinomas and 3 cases were confirmed to be clear cell renal cell carcinomas. Despite these ancillary techniques, 2 cases remained unclassified. Our study establishes the utility of these procedures in accurately classifying the great majority of renal cell carcinomas with these findings.

Editorial Comment

In some tumors, the pathologist finds clear cell component in an otherwise papillary tumor. The usual papillary renal cell carcinoma may be either type I or II. In the former, the cells have scant cytoplasm and due