Complete Summary

GUIDELINE TITLE

Practice management guidelines for the management of genitourinary trauma.

BIBLIOGRAPHIC SOURCE(S)

Holevar M, Ebert J, Luchette F, Nagy K, Sheridan R, Spirnak JP, Yowler C. Practice management guidelines for the management of genitourinary trauma. Winston-Salem (NC): Eastern Association for the Surgery of Trauma (EAST); 2004. 101 p. [129 references]

GUIDELINE STATUS

This is the current release of the guideline.

COMPLETE SUMMARY CONTENT

SCOPE
METHODOLOGY - including Rating Scheme and Cost Analysis
RECOMMENDATIONS
EVIDENCE SUPPORTING THE RECOMMENDATIONS
BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS
CONTRAINDICATIONS
QUALIFYING STATEMENTS
IMPLEMENTATION OF THE GUIDELINE
INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES
IDENTIFYING INFORMATION AND AVAILABILITY

SCOPE

DISEASE/CONDITION(S)

Genitourinary trauma, including renal trauma, renovascular trauma, ureteral trauma, bladder trauma, and urethral trauma

GUIDELINE CATEGORY

Evaluation
Management
Risk Assessment
Treatment

CLINICAL SPECIALTY

Emergency Medicine
Radiology
Surgery
Urology

INTENDED USERS

Advanced Practice Nurses
Allied Health Personnel
Nurses
Physician Assistants
Physicians

GUIDELINE OBJECTIVE(S)

To provide recommendations to facilitate a safe and more uniform approach to the understanding and management of genitourinary trauma

Specifically the guidelines sought to answer the following questions:

1. What are the indications for operative exploration of the kidneys in blunt trauma? In penetrating trauma?
2. How should renal function be assessed intraoperatively if contralateral nephrectomy is contemplated?
3. What is the trigger for exploration of the kidneys following initial nonoperative therapy? Number of packed red blood cells (PRBCs) transfused? Expanding hematoma on repeat computed tomography (CT) scan? Urinoma?
4. If nonoperative therapy is selected, is radiographic follow-up required?
5. What are the indications for exploration of the renal vessels in blunt trauma? What is the time frame for operative exploration of the renal vessels in blunt trauma? In which patients should renal vascular repair be attempted? Which patients should undergo primary nephrectomy?
6. What are the indications for operative exploration of the bladder after blunt trauma? After penetrating trauma?
7. If nonoperative therapy of a bladder injury is selected, should a suprapubic tube or a transurethral catheter be utilized?
8. How should the integrity of the ureter be assessed intraoperatively?

TARGET POPULATION

Patients with genitourinary trauma

INTERVENTIONS AND PRACTICES CONSIDERED

Radiographic Assessment

1. Computed tomography (CT) scan to assess kidney function and injury stage assessment
2. Intravenous pyelogram (IVP) for assessment of severity of kidney injury
3. Angiography for assessment of renal injury
4. Cystogram for assessment of extravasation following bladder trauma

Nonsurgical Management

1. Embolization for treatment of renal vascular injuries
2. Transurethral and suprapubic catheterization for drainage following bladder trauma

Surgical Management

1. Renal vascular control
2. Revascularization following renal trauma
3. Laparotomy for assessment of severity of kidney injury
4. Nephrectomy following severe kidney injury
5. Cystostomy following bladder trauma
6. Immediate urethral realignment and delayed urethroplasty following urethral trauma
7. Pedicle control in renal trauma

Surgical interventions considered but not recommended for renovascular trauma and ureteral trauma (no recommendations given because of insufficient evidence)

MAJOR OUTCOMES CONSIDERED

- Morbidity and mortality rates following nonoperative and operative management of renal injuries
- Need for delayed surgical intervention in patients with a devascularized renal segment
- Transfusion requirements following renal trauma
- Success of nonoperative therapy in patients with kidney trauma associated with neurological impairment
- Nephrectomy rate, and duration of operative time in patients with penetrating or blunt renal injury
- Revascularization rates following renovascular trauma
- Morbidity and mortality following ureteral injury
- Cessation of extravasation, bladder wall healing, and morbidity in patients with bladder trauma
- Morbidity and duration of catheterization in transurethral compared to suprapubic catheter placement for the treatment of bladder injury
- Urethral repair and complication rates following immediate realignment or delayed repair in patients with urethral trauma

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Hand-searches of Published Literature (Primary Sources)
Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

A computerized search was undertaken using Medline with citations published between the years of 1966 and 2003. Using the search words genitourinary,

renal, kidney, ureter, bladder, urethra, renovascular, trauma, wounds, and injury, and by limiting the search to citations dealing with human subjects and published in the English language, we identified over 3,300 articles. From this initial search, case reports, review articles, editorials, letters to the editor, pediatric series, and meta-analyses were excluded prior to formal review. Additional references, selected by the individual subcommittee members, were then included to compile the master reference list of 129 citations.

NUMBER OF SOURCE DOCUMENTS

129

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Evidence Classification Scheme

Class I: Prospective randomized controlled trials

Class II: Clinical studies in which the data was collected prospectively, and retrospective analyses were based on clearly reliable data. Types of studies so classified include observational studies, cohort studies, prevalence studies, and case control studies.

Class III: Studies based on retrospectively collected data. Evidence used in this class includes clinical series and database or registry review.

METHODS USED TO ANALYZE THE EVIDENCE

Systematic Review with Evidence Tables

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Articles were distributed among the subcommittee members for formal review. A data sheet was completed for each article reviewed, which summarized the purpose of the study, hypothesis, methods, main results, and conclusions. The reviewers classified each reference by the methodology established by the Agency for Health Care Policy and Research (AHCPR) of the U.S. Department of Health and Human Services.

An evidentiary table was constructed using the remaining 128 references.

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

Recommendations were based on studies included in the evidentiary tables.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Level I: The recommendation is convincingly justifiable based on the available scientific information alone. This recommendation is usually based on Class I data; however, strong Class II evidence may form the basis for a Level I recommendation, especially if the issue does not lend itself to testing in a randomized format. Conversely, low quality or contradictory Class I data may not be able to support a Level I recommendation.

Level II: The recommendation is reasonably justifiable by available scientific evidence and strongly supported by expert opinion. This recommendation is usually supported by Class II data or a preponderance of Class III evidence.

Level III: The recommendation is supported by available data but adequate scientific evidence is lacking. This recommendation is generally supported by Class III data. This type of recommendation is useful for educational purposes and in guiding future clinical research.

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

The draft document is submitted to all members of the panel for review and modification. Subsequently the guidelines are forwarded to the chairmen of the Eastern Association of Trauma ad hoc committee for guideline development. Final modifications are made and the document is forwarded back to the individual panel chairpersons.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

The levels of recommendation (I–III) and classes of evidence (I–III) are defined at the end of the "Major Recommendations" field.

A. Renal Trauma
    1. Level I

There is insufficient Class I and Class II data to support any standards regarding management of renal trauma.

2. Level II
    1. Preliminary vascular control does not decrease blood loss or increase renal salvage.
    2. Conservative management of shattered but perfused kidneys in hemodynamically stable patients with minimal transfusion requirements will result in a low incidence of complications, which can usually be treated with endourological or percutaneous methods.
3. Level III

    1. Preliminary vascular control may prolong operative time.
    2. The success of nonoperative management may be enhanced by the use of angiographic embolization.
    3. Nonoperative treatment of renal lacerations from blunt trauma associated with extravasation is associated with few complications, which can usually be treated with endourological or percutaneous methods.
    4. Conservative management of major renal lacerations associated with devascularized segments is associated with a high rate of urologic morbidity (38 to 82%). In patients who present with a major renal laceration associated with devascularized segments, conservative management is feasible in those who are clinically stable with blunt trauma. The physician must be especially aware of the probable complications within this subset of patients.
    5. Operative exploration of the kidney should be considered in patients with major blunt renal injuries with a devascularized segment in association with fecal spillage or pancreatic injury.
    6. Nonoperative treatment of penetrating renal lacerations is appropriate in hemodynamically stable patients without associated injuries who have been staged completely with computed tomography (CT) scan and/or intravenous pyelogram (IVP). A high index of suspicion is needed to avoid ureteral injuries if a course of nonexploration is chosen.
    7. Penetrating Grade III or IV injuries are associated with a significant risk of delayed bleeding if treated expectantly. Exploration should be considered if laparotomy is indicated for other injuries or if the injury is not completely staged prior to exploratory laparotomy for other injuries.

B. Renovascular Trauma
1. Level I

    There is insufficient Class I and Class II data to support any standards regarding management of renovascular trauma.

2. Level II

There is insufficient Class II data to support any recommendations regarding management of renovascular trauma.

3. Level III

There is insufficient Class III data to support any recommendations regarding management of renovascular trauma.

C. Ureteral Trauma
1. Level I

There is insufficient Class I and Class II data to support any standards regarding management of ureteral trauma.

2. Level II

There is insufficient Class II data to support any recommendations regarding management of ureteral trauma.

3. Level III

There is insufficient Class III data to support any recommendations regarding management of ureteral trauma.

D. Bladder Trauma
1. Level I

There is insufficient Class I and Class II data to support any standards regarding management of bladder trauma.

2. Level II

There is insufficient Class II data to support any recommendations regarding management of bladder trauma.

3. Level III
    1. Conservative, nonoperative management of blunt extraperitoneal bladder rupture has a similar outcome to that of patients treated with primary suturing.
    2. Transurethral catheters result in fewer complications and fewer days of catheterization than suprapubic catheters, regardless of the degree of bladder injury, and are therefore preferable to suprapubic catheters whether the patient is being treated nonoperatively or operatively.

E. Urethral Trauma
1. Level I

There is insufficient Class I and Class II data to support any standards regarding management of urethral trauma.

2. Level II

   There is insufficient Class II data to support any recommendations regarding management of urethral trauma.

3. Level III

   Posterior urethral injuries secondary to blunt trauma may be treated either with delayed perineal reconstruction or primary endoscopic realignment, resulting in equivalent outcomes.

Definitions:

Recommendation Scheme

Level I: The recommendation is convincingly justifiable based on the available scientific information alone. This recommendation is usually based on Class I data; however, strong Class II evidence may form the basis for a Level I recommendation, especially if the issue does not lend itself to testing in a randomized format. Conversely, low quality or contradictory Class I data may not be able to support a Level I recommendation.

Level II: The recommendation is reasonably justifiable by available scientific evidence and strongly supported by expert opinion. This recommendation is usually supported by Class II data or a preponderance of Class III evidence.

Level III: The recommendation is supported by available data but adequate scientific evidence is lacking. This recommendation is generally supported by Class III data. This type of recommendation is useful for educational purposes and in guiding future clinical research.

Evidence Classification Scheme

Class I: Prospective randomized controlled trials

Class II: Clinical studies in which the data was collected prospectively, and retrospective analyses were based on clearly reliable data. Types of studies so classified include observational studies, cohort studies, prevalence studies, and case control studies.

Class III: Studies based on retrospectively collected data. Evidence used in this class includes clinical series and database or registry review.

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

Conclusions were based on evidence obtained from prospective, randomly assigned, double-blinded studies (Class I); prospective, randomly assigned, non-blinded studies (Class II); or retrospective series of patients or meta-analysis (Class III). The evidentiary tables included one Class I reference, four Class II references, and 123 Class III references.

The type of supporting evidence is identified and graded for each recommendation (see "Major Recommendations").

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

- Appropriate management of genitourinary trauma
- Patents with hemodynamically stable renal trauma treated non-operatively experienced fewer complications, had lower transfusion requirements and spent fewer days on the intensive care unit (ICU).

POTENTIAL HARMS

Renal Trauma

- Possible complications associated with nonoperative treatment of renal trauma include urinoma and urinary fistula.
- A higher morbidity rate is found with conservative treatment of major renal lacerations associated with devascularized segments.

Bladder Trauma

Possible complications following transurethral management of bladder rupture include clot retention and formation of a pseudodiverticulum around a bone spike that projects into the bladder, urinary fistula, sepsis, hyperreflexic bladder, urethral stricture and vesical calculi.

CONTRAINDICATIONS

CONTRAINDICATIONS

Bladder Trauma

Relative contraindications to conservative management of bladder trauma include bone fragments projecting into the bladder, open pelvic fractures, and bladder injuries associated with rectal perforations.

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

- The Eastern Association for the Surgery of Trauma (EAST) is a multi-disciplinary professional society committed to improving the care of injured patients. The Ad hoc Committee for Practice Management Guideline Development of EAST develops and disseminates evidence-based information to increase the scientific knowledge needed to enhance patient and clinical decision-making, improve health care quality, and promote efficiency in the organization of public and private systems of health care delivery. Unless specifically stated otherwise, the opinions expressed and statements made in this publication reflect the authors' personal observations and do not imply endorsement by nor official policy of the Eastern Association for the Surgery of Trauma.
- This site contains evidence-based clinical practice guidelines as defined by the Institute of Medicine: "Clinical practice guidelines are systematically developed statements to assist practitioner and patient decisions about appropriate health care for specific clinical circumstances." These guidelines are not fixed protocols that must be followed, but are intended for health care professionals and providers to consider. While they identify and describe generally recommended courses of intervention, they are not presented as a substitute for the advice of a physician or other knowledgeable health care professional or provider. Individual patients may require different treatments from those specified in a given guideline. Guidelines are not entirely inclusive or exclusive of all methods of reasonable care that can obtain/produce the same results. While guidelines can be written that take into account variations in clinical settings, resources, or common patient characteristics, they cannot address the unique needs of each patient nor the combination of resources available to a particular community or health care professional or provider. Deviations from clinical practice guidelines may be justified by individual circumstances. Thus, guidelines must be applied based on individual patient needs using professional judgment.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

The final version of the guideline is forwarded to the Journal of Trauma and to the Eastern Association for the Surgery of Trauma Web page.

The guideline developers make the following recommendations regarding implementation:

Implementation involves extensive education and inservicing of nursing, resident, and attending staff members and has one important guiding principle: the guidelines must be available to the clinicians in real time while they are actually seeing the patient. The two most common ways to apply these are by using either a critical pathway or a clinical management protocol. It is felt that in the trauma and critical care setting, clinical management protocols may be more easily applied than critical pathways, however either is acceptable providing that the formulated guidelines are followed. After appropriate inservicing, a pretest of the planned guideline should be performed on a limited patient population in the clinical setting. This will serve to identify potential pitfalls. The pretest should include written documentation of experiences with the protocol, observation, and suggestions. Additionally, the guidelines will be forwarded to the chairpersons of

the multi-institutional trials committees of Eastern Association for the Surgery of Trauma, Western Association for the Surgery of Trauma and American Association for the Surgery of Trauma. Appropriate guidelines can then be potentially selected for multi-institutional study. This process will facilitate the development of user-friendly pathways or protocols as well as evaluation of the particular guidelines in an outcome based fashion.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better

IOM DOMAIN

Effectiveness
Timeliness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Holevar M, Ebert J, Luchette F, Nagy K, Sheridan R, Spirnak JP, Yowler C. Practice management guidelines for the management of genitourinary trauma. Winston-Salem (NC): Eastern Association for the Surgery of Trauma (EAST); 2004. 101 p. [129 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2004

GUIDELINE DEVELOPER(S)

Eastern Association for the Surgery of Trauma - Professional Association

SOURCE(S) OF FUNDING

Eastern Association for the Surgery of Trauma (EAST)

GUIDELINE COMMITTEE

Eastern Association for the Surgery of Trauma (EAST) Practice Management Guidelines Work Group

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Work Group Members: Michele Holevar, MD, Mount Sinai Hospital/Chicago Medical School; James Ebert, MD, Elmhurst Memorial Hospital; Fred Luchette, MD, Loyola University Medical Center; Kim Nagy, MD, John H. Stroger, Jr. Hospital of Cook County; Rob Sheridan, MD, Massachusetts General Hospital; J. Patrick Spirnak, MD, Case Western Reserve University; Charles Yowler, MD, Case Western Reserve University

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline.

GUIDELINE AVAILABILITY

Electronic copies: Available in Portable Document Format (PDF) from the Eastern Association for the Surgery of Trauma (EAST) Web site.

Print copies: Available from the Eastern Association for the Surgery of Trauma Guidelines, c/o Michele Holevar, MD, Mount Sinai Hospital/Chicago Medical School, 1500 South California Avenue F938, Chicago, IL 60612; Phone: (773) 257-6880; E-mail: mrholevar@cs.com

AVAILABILITY OF COMPANION DOCUMENTS

The following is available:

- Utilizing evidence based outcome measures to develop practice management guidelines: a primer. Allentown (PA): Eastern Association for the Surgery of Trauma; 2000. 18 p.

Electronic copies: Available in Portable Document Format (PDF) from the Eastern Association for the Surgery of Trauma (EAST) Web site.

PATIENT RESOURCES

None available

NGC STATUS

This NGC summary was completed by ECRI on October 11, 2004.

COPYRIGHT STATEMENT

This NGC summary is based on the original guideline, which is copyrighted by the Eastern Association for the Surgery of Trauma (EAST).

© 1998-2005 National Guideline Clearinghouse

Date Modified: 5/16/2005