
Quill on Scalpel

Plume et scalpel

MANDATORY EXPLORATION OR OBSERVATION FOR PENETRATING NECK INJURIES?

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In Canada, trauma remains a leading cause of death, particularly among young adults. In addition, traumatic injuries have a profound impact on society, owing to resultant temporary and permanent disabilities. Despite an overall reduction in adjusted death rates due to trauma over the past 2 decades, the yearly death rate from homicide and violence has remained steady at 2.0 to 2.2/100 000.¹ Thus, trauma in general and that due to violence in particular are an important issue for Canadians and Canadian surgeons.

Surgeons have the primary responsibility for the care of injury victims. However, many injuries and injury patterns are infrequent, and the experience of an individual surgeon may be limited. Fortunately, most Canadian surgeons who provide care to trauma victims have an advantage in the breadth, depth and maintenance of their overall surgical experience, so that a relatively limited trauma experience may be offset by overall surgical expertise. Whereas operative skills are maintained, the question is whether diagnostic skills and decision-making abilities can be maintained by a trauma volume lower than that suggested as necessary by investigators in the

United States.² Extensive experience in trauma care is an advantage with respect to decision-making about treatment strategies for various injuries or injury patterns. The management of neck injuries represents one of many areas where nonoperative treatment is safe and potentially more efficient than surgical intervention, under specific circumstances. Other examples are injuries to the spleen and liver.

Is high-volume experience in trauma management necessary for safe application of selective management principles to injuries in general and to penetrating and blunt visceral neck injuries in particular?

In this issue (pages 33 to 38), Irish and colleagues present a 10-year review of blunt and penetrating cervical injuries. They attempt to address the potential role of selective, nonoperative management of visceral neck injuries. A number of important features of the Canadian experience with general and neck trauma are evident from their presentation and are worthy of discussion. The frequency of blunt and penetrating mechanisms (19 and 66 patients, respectively) illustrates 2 features: (1) neck viscera remain relatively resistant to injury from blunt forces, but the most commonly in-

jured visceral structure in the neck is the laryngeal complex; (2) penetrating injuries, in Toronto and other Canadian cities, although not rare are also not frequent (average of 6.6/yr), and individual Canadian surgeons will infrequently be called upon to manage these injuries.

For those with penetrating injuries who did not require emergent surgery, the difference in length of hospital stay between those who underwent neck exploration and those who did not was notable (8.6 v. 4.8 days) and suggests an important advantage for selective treatment. However, these results must be carefully interpreted in light of recent global reductions in length of hospitalization. In the study of Irish and colleagues, selective management may have been relatively more frequent in the later years of the study, and the associated reduction in length of hospital stay may simply be a phenomenon of recent trends in health care.

The most relevant argument against emergent surgery for penetrating injury rests with the frequency of negative explorations in patients without indications for emergent surgery (6 of 17 patients). Irish and colleagues suggest that these patients could be

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managed more efficiently and equally safely without operation. The data presented suggest that the surgeons could safely identify patients who did not require surgical exploration and eliminate negative explorations without missing important injuries. The authors are to be commended for their results in terms of safety. However, in this retrospective study it is unclear how the stable patients were selected to undergo mandatory elective surgery or observation.

Whether the authors' recommendations should be adopted by surgeons caring for trauma patients at smaller centres with an even less extensive trauma experience is uncertain. The information needed to help address this issue, particularly in regard to penetrating injuries is presented in their Table III (page 36). Low complication rates in stable patients who underwent mandatory elective exploration as documented in this study (1 of 17 patients) is also the experience of others. Neck exploration in stable patients is a standard, established, conservative, safe approach to penetrating injuries and is within the surgical skill set of all general and head and neck surgical fellows in Canada.

The principles of neck exploration include wide exposure through an incision along the anterior border of the sternocleidomastoid muscle, with extension as necessary to deal with more complex injuries, such as those involving the thoracic outlet or the skull base. Exposure is accompanied by direct compression of active bleeding while obtaining proximal and distal vascular control. Careful exploration of missile tracts and knife paths is critical to ensure that no injuries are missed.

Selective management as documented in this study was safe, with few

complications (1 of 20 patients) and efficient: there were no negative explorations, no delayed diagnoses and a shorter hospital stay than for patients who underwent mandatory elective exploration. The disadvantage of selective management rests in its more complex algorithm than that associated with surgical exploration. Patients suitable for nonoperative treatment must be identified and separated from those requiring emergent neck exploration, the appropriate diagnostic evaluations and their limitations must be determined and patients must be carefully observed for evidence of injuries missed on initial evaluation. Potential diagnostic strategies range from physical examination alone to the exhaustive use of diagnostic studies, such as angiography, endoscopy and CT scanning. Much as a standard and explicit operative approach to neck exploration is employed, so too should be the approach to selective nonoperative management. Indications for mandatory exploration must be defined, indications for the use of individual diagnostic modalities should be defined and adhered to, and the indications for observation without investigations should be determined and applied. Most centres employing selective nonoperative management do so under explicit guidelines.

Finally, an approach including selective nonoperative management must ensure that death and major morbidity that may have been avoided by earlier operation are absolutely nonexistent. The infrequency of major life-threatening injury in patients without indication for immediate exploration limits the interpretation of these small numbers. Irish and colleagues have not statistically proven the safety of selective management in the low-volume setting. A single

missed injury, leading to major morbidity or death would greatly alter the conclusions derived from this study.

In summary, Irish and colleagues have demonstrated that selective management, in their hands, is safe and relatively more efficient than surgical exploration for penetrating neck injuries. However, it must be stressed that the application of selective management requires the development of explicit guidelines for defining the indications for mandatory exploration and for the appropriate use of various diagnostic modalities.

References

1. Riley R, Paddon P. Accidents in Canada: mortality and hospitalization. *Health Rep* 1989;1(1): 23-50.
2. Konvolinka CW, Copes WS, Sacco WJ. Institution and per-surgeon volume versus survival outcome in Pennsylvania's trauma centers. *Am J Surg* 1995;170:333-9.

CORRECTION

The article "Combined fine-needle aspiration, physical examination and mammography in the diagnosis of palpable breast masses: their relation to outcome for women with primary breast cancer" by J.L. Steinberg and colleagues (*Can J Surg* 1996;39: 302-311) contained errors in the left-hand column headings for tables II, III and IV. Instead of FNA, the headings should read PE for Table II, Mammography for Table III and Triple test for Table IV. The authors and the journal apologize to the readers for these errors.