

Clinical Surgery-American

Modern management of traumatic subclavian artery injuries: a single institution's experience in the evolution of endovascular repair

Matthew M. Carrick, M.D.*, C. Anne Morrison, M.D., Hoang Q. Pham, M.D.,
Michael A. Norman, M.D., Blake Marvin, B.S., Jeffery Lee, B.S.,
Matthew J. Wall Jr, M.D., Kenneth L. Mattox, M.D.

Michael E. DeBakey Department of Surgery, Baylor College of Medicine, Houston, TX, USA

KEYWORDS:

Trauma;
Endovascular;
Subclavian artery

Abstract

BACKGROUND: Subclavian artery injuries traditionally require morbid surgical procedures. Repair by way of an endovascular approach can potentially decrease the morbidity and mortality associated with these injuries.

METHODS: A 2-year retrospective review of trauma patients with subclavian artery injuries was performed at our institution. Relevant data were extracted from patient records and analyzed. These results were then used to develop an algorithm for the management of trauma patients with subclavian artery injuries.

RESULTS: Fifteen patients with subclavian artery injuries were identified. Five patients died in the emergency room. Of the 10 surviving patients, 8 had their diagnosis made at arteriogram. Six patients underwent endovascular repair, and 4 of these repairs were successful. Three patients were managed by way of open repair. Two deaths occurred in the endovascular group, and 1 death occurred in the open group.

CONCLUSIONS: Our findings suggest that endovascular management of subclavian artery injuries is an acceptable technique in appropriate candidates and compares favorably with open repair. However, as with open repair, the associated morbidity and mortality remains quite high. We propose an algorithm whereby hemodynamically stable patients with hard signs of vascular injury proceed directly to angiography, whereas open repair is reserved for those patients who are unstable or in whom a catheter-based approach has previously failed.

© 2010 Elsevier Inc. All rights reserved.

Recent advancements in endovascular technologies have increased enthusiasm for the management of complex vascular injuries using catheter-based techniques. Increasing

numbers of reports have described the successful management of vascular injuries by way of endovascular route.^{1–13} These reports offer a potentially attractive alternative to open exploration when the injured vessel is difficult to expose or when open exposure poses excessive risk of morbidity and mortality. Exposure of the injured subclavian artery can be challenging, and a surgeon must possess the ability to employ a variety of incisions depending on the location of the injury.^{1,14–19} Despite the recent interest in

* Corresponding author. Tel.: +01-713-873-4381; fax: +01-713-873-4313.

E-mail address: mcarrick@bcm.edu

Manuscript received June 25, 2008; revised manuscript November 21, 2008

catheter-based arterial repair, most modern series report few if any attempts at endovascular management of traumatic subclavian artery injuries.^{2,6-8,20,21} In this article, we present a case series describing our experience with the management of subclavian artery injuries in an era of growing acceptance of endovascular intervention as a viable treatment option for hemodynamically stable patients.

Materials and Methods

We reviewed the hospital records of all patients with traumatic injury to the subclavian artery who arrived at Ben Taub General Hospital (a level I trauma center in Houston, Texas) during a 2-year period from January 2004 through December 2005. Specific data gathered included demographic information (age, sex, date of injury), mechanism of injury, brachial plexus injury, other associated injuries, diagnostic methods, method and success of repair, surgical exposure, and morbidity and mortality rates. This retrospective study was approved by our institution's local Internal Review Board.

Results

During the study period, 15 patients were found to have subclavian artery injuries. Patient characteristics and outcomes are listed in Table 1, and a brief description of associated injuries is listed in Table 2. Five patients (patients F, G, K, M, and O) died in the emergency room (ER) and had their injuries identified at autopsy. Of the surviving 10 patients, 8 patients (patients B, C, E, H, I, J, L, and N) were taken directly from the ER to the interventional radiology (IR) angiography suite for diagnosis and potential treatment of their suspected vascular injuries. The remaining 2 patients (patients A and D) were taken immediately to the operating room (OR) without angiography because of the presence of hard signs for proximal arterial injury on physical examination in the ER plus hemodynamic instability.

Six patients had endovascular repair attempted as listed in Table 3. All attempts took place in the IR angiography suite at the time of initial diagnostic imaging. Vascular access was obtained by way of the right femoral artery. This site was adequate for both diagnostic and therapeutic procedures in all except for 1 patient (patient H), who required an additional sheath placement in the left brachial artery for stent deployment. All catheter-based interventions were managed percutaneously, and none of the patients required an open cut down. Two patients (patients L and N) did not undergo any attempt at endovascular repair because their subclavian artery injuries were minor and not thought to require intervention. Three of the 6 attempts at endovascular management were successful and included placement of 2 permanent

Table 1 Outcomes for patients with subclavian artery injuries during a 2-year period at our institution^a

ID	Age	Sex	Mechanism	ISS	TRISS	Died in ER	Method of diagnosis	Side of injury	Site	Type of repair	Outcome	Brachial plexus injury
A	23	M	Gunshot wound	9	.9971	No	Physical examination	Left	Distal	Interposition graft (6 mm)	Survived	Yes (iatrogenic)
B	60	M	Gunshot wound	13	.9764	No	Angiography	Right	Middle	Stent placement	Survived	Number
C	20	M	Shotgun wound	14	.9973	No	Angiography	Left	Distal	Stent placement	Died	**
D	29	M	Gunshot wound	13	.7804	No	Exploration	Right	Middle	Ligation	Died	**
E	22	M	Gunshot wound	13	.9983	No	Angiography	Right	Distal	Stent placement	Survived	Yes (caused by initial injury)
F	40	F	Motor vehicle	51	.0057	Yes	Autopsy	Left	Proximal	NA	Died	**
G	24	M	Gunshot wound	18	.0345	Yes	Autopsy	Right	Not specified	NA	Died	**
H	24	M	Fall (from horse)	38	.9650	No	Angiography	Left	Proximal	Stent placement	Survived	No
I	21	M	Gunshot wound	20	.9952	No	Angiography	Right	Distal	Interposition graft (6 mm)	Survived	Yes (caused by initial injury)
J	43	M	Fall (from roof)	36	.9699	No	Angiography	Left	Proximal	Balloon occlusion	Died	**
K	55	M	Motor vehicle	50	.0009	Yes	Autopsy	Right	Not specified	NA	Died	**
L	32	M	Gunshot wound	18	.9964	No	Angiography	Right	Proximal	None (minor injury)	Survived	No
M	29	M	Gunshot wound	22	.0191	Yes	Autopsy	Right	Not specified	NA	Died	**
N	34	M	Gunshot wound	25	.8610	No	Angiography	Left	Proximal/middle	None (minor injury)	Survived	No
O	19	M	Stab wound	21	.0222	Yes	Autopsy	Left	Not specified	NA	Died	**

ISS = Injury Severity Score; TRISS = Trauma Injury Severity Score; NA = not applicable.

^aPatients are listed chronologically.

Download English Version:

<https://daneshyari.com/en/article/4280434>

Download Persian Version:

<https://daneshyari.com/article/4280434>

[Daneshyari.com](https://daneshyari.com)