

Successful Endovascular Salvage For Traumatic Renovascular Injury After Eighteen Hours

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Abstract

Management of renal vascular injuries remains controversial. This case report demonstrates one approach to revascularization that resulted in successful salvage of renal function eighteen hours after the initial injury. A seventeen year old woman was involved in a high speed motor-vehicle collision where she sustained multiple life threatening injuries, including a renovascular injury. Eighteen hours after her injury she was stable enough to undergo aortography and was found to have a left renal artery intimal flap which was managed with endovascular stenting. Her creatinine returned to normal and she remains to be normotensive with normal renal function three years later.

INTRODUCTION

Management of renal vascular injuries remains controversial. Often times there are associated life threatening injuries involved and time to diagnosis is delayed. Classically, renal revascularization has been discouraged in those patients with a warm ischemia time greater than six hours, unless the injury is bilateral or there is a solitary kidney involved. In this case report we demonstrate one approach to revascularization that resulted in successful salvage of renal function eighteen hours after the initial injury.

CASE REPORT

A seventeen year old woman was involved in a high speed motor vehicle collision. She was an unrestrained driver requiring approximately one hour of extrication, then was taken by helicopter to our trauma center. She required aggressive resuscitation and intubation upon arrival. She sustained spinal fractures at C6, C7, L1 and L2 with spinal cord compromise and paraplegia, a right acetabular fracture and bilateral sacral fractures. A contrast enhanced computed tomography scan demonstrated complete lack of enhancement of the left kidney with no significant uptake or excretion of contrast (figure 1).

Figure 1



No other solid organ injuries. Initial blood urea nitrogen and creatinine were 16mg/ dl and 1.2 mg/ dl respectively. Urine was without gross blood and had 40-50 red blood cells per high power field on microscopic examination.

She underwent emergent stabilization of her spine but abdominal/retroperitoneal exploration was not performed due to lack of associated injuries. Approximately eighteen hours after the initial time of injury she was stable enough from a neurosurgical standpoint to undergo aortography. This demonstrated markedly decreased left renal artery flow with an abnormal nephrogram (figure 2).

Figure 2



It was suggestive of an intimal flap resulting in approximately 90% stenosis. At that point a sheath and a wire were advanced beyond the defect and a 6mm x 14mm balloon stent was successfully deployed over the site of the intimal flap. An angiogram then performed demonstrated a normal nephrogram with no filling defect (figure 3).

Four days after injury, her creatinine stabilized at 0.9 mg/ dl. Initial nuclear renography showed 84% function of the right kidney and 16% function of the left kidney with an overall clearance of 107 ml/minute. Repeat renogram three months later demonstrated 60% function of the right kidney and 40% of the left with good overall function as evidenced by a

MAG3 clearance of 237 ml/minute. This patient continues to improve in follow up and remains normotensive with normal renal function three years later.

DISCUSSION

Blunt renal artery injury is a relatively rare finding, one study demonstrated an incidence as low as 0.08% of all blunt abdominal trauma. ¹ Treatment of these injuries is estimated at a success rate of only 25-35%. ² Complications associated with these type of injuries include late renovascular hypertension which can be seen up to 96 days after injury. ³ This occurs more often in those without revascularization. Time to reperfusion is thought to be a major factor in the decision of revascularization with the theory that late hypertension develops secondary to ischemic damage.

Endovascular stent placement for blunt renal artery injury has been shown to be a favorable approach for these injuries in the absence of other injuries requiring surgical intervention. It avoids possible mortality and morbidity of open surgery and thus far has shown low incidence of late hypertension or complications.

References

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