

clinical success and low complication rate. The most common persistent pattern in our series was found to be recanalization.

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Bronchial Artery Embolization; Retrospective Survey from a Tertiary Care Hospital in a Developing South-Asian Country

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Objectives: To evaluate the clinical presentation, etiological cause, and source of hemoptysis in patients undergoing bronchial artery embolization. A 5-year experience of success rate, complications, and follow-up at a tertiary care hospital in developing country. **Methods:** A retrospective cross-sectional study was conducted between January 2014 and December 2018. The study population included patients undergoing angiography for bronchial artery embolization (BAE). Demographic details including risk factors were included. Clinical sign and symptoms were recorded. Bronchoscopy and arteriography were used to locate the source of bleed. Embolization technique and postprocedural results were analyzed. Success and failure rates were noted. Finally, complication, follow-up results and mortality were also discussed. **Results:** The study included 40 cases. Of these, 80% were males. 50% had tuberculosis. 37.5% underwent bronchoscopy. On imaging, 32.5% had bronchiectasis, 30% had pleural thickening, and infiltrate/consolidation was seen in 32.5% of cases. Disease distribution was unilateral in 72.5% of cases. Bronchial artery involvement was seen in 67.5%, and both bronchial and systemic involvement was seen in 25% of cases. Technical success of embolization was 87.5%. Microcatheter was used in 91.4%. Poly vinyl alcohol (PVA) alone was used in 68.6%. **Conclusion:** BAE and nonbronchial systemic artery embolization are safe and effective nonsurgical treatments for patients with massive hemoptysis.

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The Necessity of Surgical Resident Training in Damage Control Vascular Surgery: A Third World Experience

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Objectives: Vascular injuries pose a major challenge for all surgeons even those who are experienced, especially in low/limited resources austere environments. To evaluate the 10 years' experience with damage control vascular surgery (DCVS) in managing vascular injuries in different rural emergency centers, with special emphasis on the rule of surgical residence. **Methods:** This was a 3-year retrospective study from December 2016 to January 2019, to report all cases of isolated vascular trauma that were referred to our center with an emergency vascular trauma from different rural emergency centers. Patients' files were thoroughly reviewed to report the type of vascular injury, the initial DCVS, and the rank of the surgeon

who performed the initial management before referral. **Results:** A total of 240 patients were reported. They were 160 males and 80 females with a male-to-female ratio of 3:1. Their age ranged from 15 to 67 years with the median age 38.5 ± 1.5 years. In 195 patients, the cause of vascular injury was road traffic accident in whom 71 suffered from major trauma to the femoral artery, while the remaining 24 patients experienced trauma to the femoral vein. The remaining 175 patients were victims of assaults by gunshot in 45 patients or direct penetrating stab or contused wound in 130 patients. The mean time between the initial injury and the primary DCVS that was done at the original center ranged from 7 to 20 h, with the mean of 12.5 ± 2.6 . Limb salvage was successful in 112 patients. Out of them, 107 initially underwent the DCVS by experienced surgeons, while the remaining five patients were treated by residents with different scopes of experience. Limbs were sacrificed in 128 patients because of failure of the DCVS. In those patients, amputation was performed as a life-saving procedure. **Conclusion:** Damage control vascular surgery is an effective tool in limb salvage in trauma patient. It should be a major part of Junior and senior residents in the developing countries to save the hospital resources and to decrease the cost-effectiveness of health care.

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Endovascular Treatment of Traumatic Carotid Cavernous Fistula

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Objectives: To evaluate the technical success, complications, and outcome of endovascular management of posttraumatic carotid cavernous fistula (CCF) in patients presenting at Lahore General Hospital (LGH) Lahore, Pakistan. **Methods:** All patients with CCF treated by transballoon arterial embolization were reviewed from January 2016 to December 2018. A total of 48 patients with CCF were treated in angiography suite of LGH, Lahore. 20 (41.6%) patients had deployment of single balloon Gold ball valve balloon (Balt). 18 (37.5%) were treated successfully with the double-balloon technique. 10 (20.8%) had occlusion of cervical part of internal carotid artery with detachable balloon after confirming contralateral flow due to their very large size of fistula. There were 45 (93.71%) males and 3 females. The median age was 36 years, ranging from 20 to 55 years. All patients had CCF caused by trauma and presented with ocular and orbital symptoms, including orbital bruits, deterioration of visual acuity, chemosis, and pulsatile proptosis. **Results:** A total of 42 (87.5%) patients showed full recovery with detachable balloons. Three (6.25%) patients presented with recurrent symptoms due to displacement of balloon, and in 5 (10.4%) patients fistula showed partial closure but symptoms improved significantly. **Conclusion:** The detachable balloon technique for transarterial treatment of CCFs is a feasible method that increases the chance of completely occluding the orifice of the CCF. Balloon embolization appears more economical and simple as compared to coil or onyx embolization.