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NOVEL TECHNIQUE OF MANAGING POST-OPERATIVE BLOOD LOSS BY MECHANICAL COMPRESSION DRESSING

Varunjikar M. D¹, Bejoy E. Jayan², A. M. Varunjikar³, Shital Joshi⁴, C. R. Joshi⁵

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ABSTRACT: We describe a case of postoperative hemorrhage, after cemented bipolar hemiarthroplasty in two cases, treated by a novel technique of Figure of 8 in spica fashion applied adhesive. This procedure needs no anesthesia, simple, cost effective technique, has almost nil complications and avoids the uncertainty of further surgical exploration. Uncontrolled, unexplained soakage with blood in hip or knee arthroplasty are rare but because of the increasing number of these operations and of revision procedures the incidence is rising.¹⁻¹¹ These problems are associated with considerable morbidity, particularly if they are undiagnosed or if treatment is delayed.^{2, 6,9,12} Our novel technique of Figure of 8 bandage in spica fashion allows a simple resolution of postoperative hemorrhage.^{1, 3, 4, 7, 8, 10, 11, 13-20}

KEYWORDS: Uncontrollable postoperative bleeding, simple method to manage, figure of 8 spica adhesive.

INTRODUCTION: There are two ways to treat a challenging case:

1. Ideal way where you have got all facilities of investigations and all ways to treat the patient without any financial constrain.
2. Another way to treat such challenges in a rural set-up in developing countries like India, where, one might have to modify the mode of treatment without rational investigations and management accordingly in non-affordable cases having financial constrain.

CASE REPORT: A case of intra- capsular fracture neck of femur underwent cemented bipolar hemiarthroplasty after obtaining anesthesia fitness. Intra-operatively, there was no significant active bleeding or any obvious, visible vascular injury. Post-operative, after few hours, soakage of the wound was seen and drain was about 300 ml.

Fig. 1: Soakage of dressing and blood loss

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Fig. 2: Dressing removed showing suture line and blood loss

Patient was treated with coagulant medicines as injection pause (TEA), dressing was changed and compression was given with dynaplast. Hemostasis was expected within few hours, but, still there was oozing with soakage of dressing and collection of blood in the bed which was around 300-400cc. 2 units of blood transfusion was given. He was investigated to find out probable cause of hemorrhage. He had mild hypotension, anemia (Hb- 8gm %). BT, CT, PT-INR and platelet count were within normal limits. LFT, RFT and serum electrolytes were within normal limits. Patient has no complaint regarding surgical pain – cemented bipolar done under spinal\epidural.

Soakage was persistent on Day 2 and the amount of blood loss was thought to be almost same. Drain was not serving any purpose and hence removed. Blood loss was replaced with Blood transfusion. There is no facility to find out clotting factors and angiography for want of vascular surgeon in our hospital set-up. Risk factors and the situation were explained to the patient and relatives. It was also explained that patient may need referral to higher centre for further management. There was no evidence of any infection. On Day 3 post-operative, in view of persistent soakage, it was thought that some other technique may be required to tackle the situation. Dynaplast has expanding capacity and may not give proper compression of the wound.

So, he was given Figure of 8, four inches adhesive tape compression dressing in spica manner with care to protect bony prominence (ASIS) by putting soft pad. After tight and compressive dressing with non- elastic adhesive, there was no further blood loss. Distal neurovascular deficit was observed.

Fig. 3: Initial stage of compression dressing

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Fig. 4: Figure of 8 fashion sticking adhesive being applied by lifting patient with towel

Fig. 5: Compression bandage dressing in figure of 8 spica fashion is completed

Sutures and dressing was removed after 14th post operative day and healing of the wound was normal. He was allowed weight bearing after about a week (3 weeks post-operatively). He was followed-up for one and a half year at interval of 6 months. Long term follow may be required.

DISCUSSION: Although hemorrhage after arthroplasty is rare, they may threaten both life and limb.

Several mechanisms of vascular injury and hemorrhage have been described including perforation of an artery by a retractor, injury to an atherosclerotic artery with the subsequent formation of a thrombus induced by peri- operative maneuvers of the joint, by a tourniquet, by direct trauma to a vessel, avascular injury secondary to the heat of polymerization of methylmethacrylate and a false aneurysm or arterio-venous fistula induced by repeated local trauma.^{2, 6}

Exact knowledge of the relationship of the neurovascular structures within the surgical field is essential to prevent these injuries.^{2, 3, 6, 17, 18, 21} the use of blunt rounded retractors is recommended.

Early recognition of a vascular injury is essential, although sometimes its presentation may be delayed. Capillary oozing is difficult to explain and blood loss may be considerable and challenging.

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Severe pain, a pulsatile mass with decreasing hemoglobin levels or fresh bleeding, usually through the drains, are indications of a vascular complication.^{2,6,11,18,21}

Embolization is preceded by diagnostic angiography, usually using a contra lateral approach.^{15, 16} The exact anatomy of the lesion requiring treatment must be fully identified.

Thigh is conical structure. In case of bleeding through a wound - especially surgical one after hip intervention it's difficult to give compression bandage in this region.

Post-operative bleeding after hip surgery is challenge or a nightmare for an Orthopedic surgeon especially when all possibilities are being ruled out or were with normal limits – pre or intra operatively – especially – BT\CT, PT INR, LFT, RFT, clotting defects – lack of factors, intra operative injury to vessel & proper hemostasis is being achieved during the procedure.

There is good amount of blood loss through drain.

Patient was treated with coagulant medicines as injection pause (TEA), platelet, BT, compression dressing, correction of any factor in blood if any etc.

Alternative remains with us may be angiography & re exploration. There is danger in re exploration of infection, if it's without any outcome & bleeding\blood loss persists through the surgical wound.

In such a case of persistent post op bleeding, 14 pts. of BT & platelets were infused along with coagulants during his hospital stay. Compression with dynaplast did not serve any purpose as it was stretchable.

We did dressing, pads were put & compression dressing was given with 4 inches adhesive plast in spica fashion or in figure of 8 manner starting on thigh – outer side – taking on the abdomen towards the opposite ASIS, going to the back I e lumbar region, coming to same side & compressed against the hip wound going towards medial side of the thigh.

Important things are – 1) Protect both ASIS with sufficient pads 2) Compress wound tightly in circular & figure of 8 – spica fashion 3) Take 2-3 rounds. 4) Explain to the patient. 5) Watch for distal neuro vascular deficit.

Hip joint and femur are well ensheathed with huge muscle mass. Compression with adhesive with figure of 8 fashion is thought to occlude the capillaries and control bleeding without obliterating major vessels.

Unless you suspect any red signal regarding distal neuro vascular deficit, infection, considerable soakage, sticking is removed after about 15 days.

With this type of treatment which was started on 2nd post-operative day, stitches & compression dressing removed on 14th post op day, we found satisfactory result. Wound healing was satisfactory .weight bearing was started after 3 weeks from surgery.

Post-operative assessment of lab parameters found satisfactory.

We feel that its best alternative technique to the post-operative bleeding of a hip surgical wound.

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AUTHORS:

1. Varunjikar M. D.
2. Bejoy E. Jayan
3. A. M. Varunjikar
4. Shital Joshi
5. C. R. Joshi

PARTICULARS OF CONTRIBUTORS:

1. Associate Professor, Department of Orthopaedics, Vikhe Patil Memorial Hospital.
2. Senior Resident, Department of Orthopaedics, Vikhe Patil Memorial Hospital.
3. Consultant, Department of Anaesthesiologist, Vikhe Patil Memorial Hospital.
4. Consultant, Department of Anaesthesiologist, Vikhe Patil Memorial Hospital.

5. Consultant Radiologist, Department of Radiology, Vikhe Patil Memorial Hospital.

NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:

Dr. M. D. Varunjikar,
#54, Tathasthu,
Deshmukh Colony,
Opp. Civil Hospital,
Sadar Bazaar, Satara.
E-mail: varunhsp@yahoo.co.in

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