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Deep Vein Thrombosis (DVT) in an Operated Sub Trochanteric Fracture Femur

N. S. Dhaniwala[1]*, Malhar Jadhav[2], Venkatesh Dasari[2], Vrushabh Kumbhare[2]

[1]*Department of Orthopedics, Jawaharlal Nehru Medical College, Wardha (M.S.), India.

[2]Resident Orthopedics, Jawaharlal Nehru Medical College, Wardha (M.S.), India.

nsdhaniwala@gmail.com

***Corresponding Author:** Dr. N. S. Dhaniwala, Professor, Department of Orthopedics, Jawaharlal Nehru Medical College, DMIMS (DU), Sawangi (M), Wardha (M.S.), India.*

Abstract

***Introduction:** Deep vein thrombosis (DVT) may be seen in polytrauma patients in subclinical or overt presentation. There is high risk of developing deep vein thrombosis following major orthopedic surgery like total hip replacement, total knee replacement or hip fracture surgery. If prophylaxis is not used after these surgeries, symptomatic DVT or Venous thromboembolism (VTE) may develop in 4% patients within 35 days[1].*

***Case Report:** A 70 years old lady operated for long oblique sub trochanteric fracture left femur developed DVT in the affected lower limb 10 days after surgery. The diagnosis was confirmed by Doppler study and the condition managed effectively by thrombolysis and inferior vena cava filter application.*

***Message:** DVT should be suspected in elderly persons undergoing hip surgery and prophylaxis be practiced to prevent this complication.*

Keywords: *Deep Vein Thrombosis, Hip fracture, Prophylaxis.*

Case Report

A 70 years old lady presented in the casualty of tertiary care hospital with the chief complaints of pain in the left hip area and inability to walk following fall three days back at home. She was a known case of bronchial asthma under irregular treatment. Examination revealed the left lower limb in external rotation, and tenderness at greater trochanter& sub-trochanteric region. Movements were grossly painful, and the lower limb looked minimally short. X-ray pelvis AP& lateral view of the left hip showed long oblique sub trochanteric fracture extending into intertrochanteric area (Fig.1). All the routine blood investigations, ECG and x- ray chest did not reveal any abnormality.

The fracture was managed by open reduction and fixation using long interlock femur nail and proximal and distal interlocking screw fixation in the standard way. Post operatively the patient was given IV antibiotics for five days along with tablet aceclofenac 100mg 12 hourly, calcium 500mg 12 hourly, pantaprazole 40 mg once daily and ascorbic acid 500mg daily. The limb was kept on elevation pillow and quadriceps & ankle exercises were encouraged from 1st post-operative day. No DVT prophylaxis was used as per the routine practice. The postoperative X-ray showed satisfactory reduction with proper positioning of the implant (Fig. 2A & 2B). However, the patient was reluctant in doing knee mobilization and partial weight bearing ambulation with walker.

10 days later the patient started developing swelling in the operated left thigh. Low Molecular Weight Heparin (LMWH, Injection Enoxaparin Sodium) 20 units subcutaneous once daily was given for 3 days. Crepe compression was given in the limb and exercises including ankle pumps, static quadriceps contraction, knee and ankle joint mobilization were reinforced. However, as the swelling persisted, the patient was subjected to Color Doppler study for the left lower limb (venous) which showed "Acute Deep Vein Thrombosis in left lower limb involving popliteal vein, superficial femoral vein, and common femoral vein extending into external iliac vein".

The patient was managed further by interventional radiologist by "Intravenous Thrombolysis of left lower limb and Inferior Vena Cava Filter Placement ". Inferior vena cava filter was placed in the infrarenal segment of inferior vena cava through right internal jugular vein under all aseptic precautions. DVT thrombolysis was done through puncture in popliteal vein using mechanical and pharmacological means. Injection urokinase @ of 1 lac units per hour in 10 ml normal saline, to a total of 15 lac units was given as infusion through spray in the special canula. Conventional/ Unfractionated Heparin (UFH) 1000 units per hour in 10 ml was also given through sheath of the canula continuously for 15 hours. The spray and sheath were removed at two-hour gap, hemostasis achieved and dressing done.

Injection Low Molecular Weight Heparin (LMWH, Enoxaparin Sodium injection) 60mg in 0.6 ml available in pre- filled syringes was then used subcutaneously twice daily for three days. Tablet Augmentin 625mg and tablet Ranitidine 150mg twice daily were given for 5 days. Tablet Acitrom (oral anticoagulant Acenocoumarol) 2mg was given from the 2nd post procedure day overlapping with the 3rd dose of LMWH. Dose was titrated further using Prothrombin time and INR (International Normalized Ratio). Two days after the procedure repeat color doppler study of the left lower limb was done which demonstrated "Good flow in popliteal vein, superficial femoral vein and common femoral vein". The patient soon became asymptomatic and was able to move her lower limb joints and do active exercises. Her thigh girth reduced from pre-intervention 56 cm to post-intervention 48 cm. She was discharged with advice of continuing exercises, partial weight bearing with walker and joint mobilization. She continues to be under follow up.

Discussion

Deep vein thrombosis is formation of blood clot in a deep vein, mostly in legs, though it can extend higher to thigh and iliac vessels also. Its common symptoms are pain, swelling, redness or warmth in the involved region. About half of the cases develop no symptoms. The complications of pulmonary embolism (PE), also known as Venous Thromboembolism (VTE) may occur as a result of detachment of clot which may travel to the lung. Post thrombotic syndrome (PTS), also called as post phlebitis syndrome and venous stress disorder may occur as a long-term complication of deep vein thrombosis[2]. Risk factors for DVT are recent surgery, trauma, and lack of movement of joints. Frequency of DVT is estimated to be 1 in 1000 people per year[3]. Suspected DVT may be assessed by using clinical prediction rule "Wells Score"[4]. D- dimer test may be used to assist with excluding its diagnosis or to show a need for further testing. At present ultrasonography/ color doppler study gives the definite diagnosis of the condition and its extent.

The three factors contributing to deep vein thrombosis are venous stasis, hypercoagulability of blood and changes in endothelial lining[5,6]. Major orthopedic surgery such as total hip replacement, total knee replacement or hip fracture surgery has a high risk of causing venous thromboembolism. If prophylaxis is not used after these procedures, there is a 4% chance of developing VTE within 35 days[1]. Early prophylaxis in surgery patients with low molecular weight heparin is associated with significant reduction in postoperative venous thrombosis. Initiation of prophylaxis therapy within 8 hours of surgery gave the greatest effect[3]. American college of chest physicians (ACCP) recommended the use of low molecular weight heparin to patients undergoing major orthopedic procedures at least 12 hours preoperatively or post operatively[1].

Postoperative DVT prophylaxis with Unfractionated Heparin (UFH) is achieved by administering a bolus of 5000 units IV every 8 hours for 5 to 7 days. This low dose heparin regimen causes a 60-70% reduction of DVT and pulmonary embolism in low to moderate risk patients. Heparin overdose is reversible with protamine sulphate, 1 mg neutralizing 100 units of heparin activity. DVT prophylaxis can also be achieved by giving 20-40 mg of Enoxaparin (LMWH) subcutaneously daily for 10 days or more. Urokinase in the dose of 4400 units/kg body weight dissolved in 15 ml of 0.9% normal saline given over 10 minutes, followed by 4400 units /kg /hour for 12 to 24 hours as infusion is used in established case of DVT.

The described case was suspected late but further investigation and management was done promptly. Lack of suspicion and non-availability of doppler study facility and intervention radiologist may cause delay in such treatment in many centers. American College of Chest Physicians (ACCP) currently recommends anti-coagulant therapy in preference to thrombolysis by cannula. In established cases treatment of DVT

may have to be continued for 3 months also. In view of these facts, it is important to suspect this condition and take preventive steps and prophylaxis with low molecular weight heparin on a routine basis after major orthopedic surgery in lower limb.

Message

Deep vein thrombosis is not an uncommon entity after major orthopedic surgery. In the postoperative period in a patient having unexplained swelling, warmth and pain around the operative area should arouse the possibility of DVT. Limb elevation, crepe compression, muscle & joint mobilization and ambulation are important preventive steps. Postoperative prophylaxis using Low Molecular Weight Heparin (LMWH)is practical and recommended.

Fig 1. *X-ray Pelvis AP View showing subtrochanteric fracture extending into intertrochanteric area.*

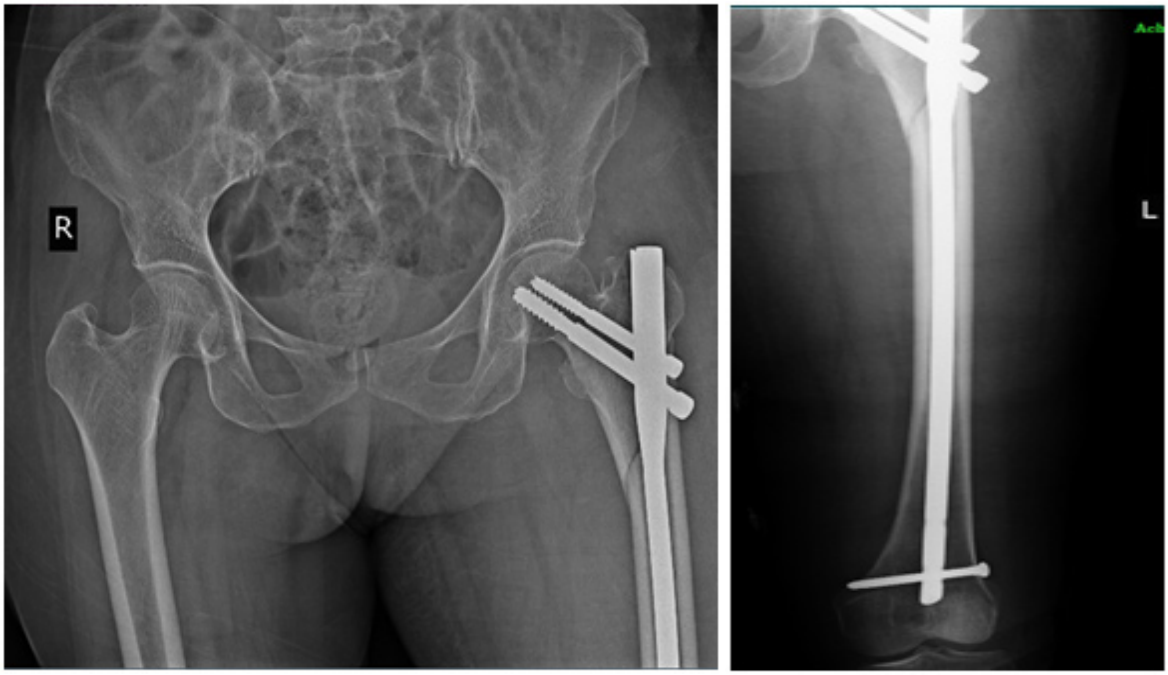

Fig 2A &2B. *Postoperative X-ray showing satisfactory fixation with Interlocking nail and screws*

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