Deep Venous Thrombosis in Lap Band Surgery: A Single Center Study

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Abstract Bariatric surgery has been demonstrated to be an effective treatment for morbid obesity. The purpose of this study is to investigate the incidence of pre- and post-operative deep venous thrombosis (DVT) in Lap-Band surgical patients. This study group comprised 56 consecutive patients who underwent Lap-Band surgery. Mean age and body mass index were 38 years (range: 18–64 years) and 50.9 kg/m² (range: 53–74 kg/m²), respectively. All the patients were screened with duplex ultrasonography pre- and post-operatively. There were no iliac, femoral, or popliteal vein thromboses detected at any given point of time. No patient had any clinical signs or symptoms of DVT post-operatively. There were no observable differences attributable to DVT prophylaxis. This data suggest that in the setting of chemical and mechanical prophylaxis, the incidence of DVT in patients undergoing Lap-Band surgery at an established bariatric centre is minimal.

Keywords Thrombosis · Obesity · Bariatric surgery · Lap-Band

Introduction

Venous thromboembolism is a feared complication of surgical procedures. Multiple and various factors such as obesity, pneumoperitoneum, major orthopaedic procedures, prolonged hospitalisations, re-interventions, varicose veins, administration of estrogen, immobilisation, malignancies, and hypercoagulable states have been implicated in the development of post-operative DVTs and pulmonary emboli [1–7]. Both pharmacologic and non-pharmacologic methods have been recommended to decrease the incidence of DVT associated with surgical procedures [8–14]. Many institutions, such as ours, use a combination of unfractionated heparin (7,500 units every 8 h) or low molecular weight heparin (40 mg every day), prescribe compression stockings, and suggest early post-operative ambulation (within 24 h).

The purpose of this article is to conduct a prospective study on the incidence of DVT in laparoscopic bariatric surgery.

Methods

A group of 56 consecutive patients with no past history of DVT who underwent bariatric surgery between January 2002 and January 2007 were prospectively evaluated. There were 31 females and 35 males, with a mean age of 38 years (range: 18–64 years), and a mean BMI of 50.9 kg/m² (range: 53–74 kg/m²). The patients were not categorised further. All patients underwent laparoscopic gastric banding (Lap-Band) [15, 16] at the Staten Island University Hospital (SIUH). Experienced vascular technicians used the Phillips HDT-3000 scanner (Phillips Healthcare, Andover, MA) with 7.0-MHz probes to study the iliac, femoral, popliteal, and crural

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veins. Lack of compressibility or absence of flow augmentation in distended veins was interpreted as suggestive of venous thrombosis. Patients were scanned 1–12 weeks prior to surgery as well as on the post-operative day 2 or 3. All patients received routine DVT prophylaxis with either unfractionated or low-molecular weight heparin. In addition, pneumatic compression devices were applied both intra- and post-operatively. They remained in place until the patient was fully ambulatory. Low molecular weight heparin or unfractionated heparin (7,500 units subcutaneously, every 8 h) was started pre-operatively before surgery in the morning, and continued until the patient was fully ambulatory. Patients were also evaluated for pain, tenderness, swelling, and redness of the lower extremities on post-operative day 2 or 3. The Institutional Review Board of SIUH approved this study.

Results

There was no sonographic evidence of thrombi in the iliac, femoral, or popliteal veins in any of the patients in this study. No patient reported symptoms of swelling, pain, redness, or tenderness of the lower extremities during the post-operative period, and there were no instances of clinical symptoms suggestive of pulmonary emboli. No complications that could directly or indirectly affect the DVT prophylaxis regimens were observed.

Discussion

Obesity has reached epidemic proportions all over the world, especially in the United States. Traditionally, obesity has been considered a predisposing factor for the development of thromboembolic diseases, further enhanced by undertaking of major abdominal interventions such as in bariatric surgery. Such a predisposition is attributable, at least in part, to the difficulty in mobilising severely obese patients as well as to the decreased fibrinolytic activity in such patients. According to the published literature, the risk of pulmonary embolism (PE) after bariatric surgery ranges from 0.1% to 1.3%. This study was prompted by the fact that while the incidence of lower limb venous thrombosis is high, there is still no consensus regarding ideal prophylaxis in this group of patients [9]. While the incidence of DVT is high (12%) in the absence of thromboprophylaxis [6], post-operative bleeding has been a limiting factor in the implementation of more aggressive regimens [17]. Current DVT prophylactic guidelines for the bariatric population have reduced the incidence of lower extremity thrombotic events [18, 19]. Recent studies have shown that the incidence of DVT following Roux-en-Y gastric bypass

surgeries can be as low as 0.06% to 0.79% [11, 20]. The results from this study are in agreement with the previous series that observed a very low incidence of thromboembolic complications in the setting of bariatric surgery with appropriate DVT prophylaxis [9, 11–14]. Furthermore, while most other studies addressed morbidly obese patients (BMI>40), data from this study was based on a super-obese population (BMI>50).

In summary, 56 patients undergoing Lap- Banding were prospectively examined. There were no instances of DVT in this cohort, and no PE was observed. Additionally, the historical incidence of DVT following Lap-Band surgery at the institution where the study was conducted has been extremely low. There were no episodes of bleeding, demonstrating that the method of prophylaxis employed was safe. The use of DVT prophylaxis in morbidly obese patients, consisting of low molecular weight or unfractionated heparin, compression devices, and early ambulation will be continued, to ensure a low rate of thromboembolic events. Based on the findings of this study, a strong argument should be made to eliminate our current practice of obtaining routine pre-operative lower extremity sonographic studies.

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