e - ISSN - 2349 - 8005

INTERNATIONAL JOURNAL OF ADVANCES IN CASE REPORTS

Journal homepage: www.mcmed.us/journal/ijacr

SURGICAL SITE INFECTIONS AFTER LAPAROSCOPIC SLEEVE GASTRECTOMY, A CASE SERIES

Haitham Mohammad Al Falah, Saleh M. Al Salamah*, Muhammad Izaz Hashmi, Manayer Saleh Al Salamah, Jovial De Souza, Ghanem Suliman Abbas

Department of Surgery, College of Medicine, Head of University Surgical Unit, King Saud Medical City, King Saud University, P.O. Box: 261283, Riyadh.

Corresponding Author:- **Saleh M. Al Salamah**
E-mail: smsalamah@hotmail.com

Article Info

Received 26/11/2015
Revised 14/12/2015
Accepted 20/12/2015

Key words:
Laparoscopic sleeve gastrectomy, Surgical site infection, Obesity, Bariatric surgery.

ABSTRACT

The surgical wound encompasses the area of the body, both internally and externally, that involves the entire operative site. For discussion and classification purpose a surgical wound can be divided into three anatomical levels depending upon its depth, which are:

1. Superficial: the skin and subcutaneous tissue
2. Deep: the fascia and muscle
3. Organ-space: internal organs and or body cavities.

Three patients had surgical site infections and we wanted to evaluate whether any modification in our method needed to be done. Two patients out of 217 had SSI but the aetiology was due to staple line leak for one case and mesenteric ischemia for the other. These cases were thus excluded from the study. Laparoscopic sleeve gastrectomy (LSG) is one of the most commonly performed and popular procedure for weight loss in the morbidly obese patient and the weight loss seen both in short and intermediate-term is encouraging. LSG is classified as a clean contaminated surgery and carries its own risk of surgical site infection. The aim of this study is to evaluate the incidences of surgical site infections (SSI) after LSG. Two hundred and seventeen patients who underwent LSG were reviewed retrospectively. Data analysis was conducted serially during follow up of these patients to look for complications. Three patients had SSI which were a spectrum of superficial surgical site infections (wound infections), space infections (peritonitis) and organ infection (liver abscess). Each of these patients underwent intervention to treat that infection and all of them improved afterward. The incidence of SSI were <2% which is in the accepted international range of SSI for clean contaminated surgeries proposed as 4% and up to 6 to 9%. LSG is a modern choice for treatment of morbid obesity with low SSI rates. [10]

INTRODUCTION

Laparoscopic sleeve gastrectomy is a surgical resection of part of the stomach, and a considered a restrictive procedure which creates a banana-shaped remnant of the stomach while preserving the vagus nerve and pylorus [1]. It is highly reproducible and its good outcome with a low complication rate makes it a safe option for morbid obesity treatment. LSG is essentially classified as a clean-contaminated surgery [2]. The incidence of SSI in this wounds class is purported to be from 4% to 6-9% [3-8]

The most widely recognized definition of SSI, which is used throughout the USA and Europe, is that devised by Horan and colleagues and adopted by the CDC [9].

This splits Surgical Site Infection into three groups: Superficial Incisional SSI, Deep incisional SSI, and Organ-space SSI depending on the site and the extent of infection. The study aims to present the cases of LSG who developed surgical site infections (SSI) at different levels and assess the rate of SSI post LSG [10].

MATERIALS AND METHODS

The data of 217 LSG patients were collected from March 2011 to December 2014. The mean age± SD was 32±8.7 years. 160 patients were female (74%). The pre-operative weight± SD was 123±21 Kg (range 85-180) and the body mass index was 47.1±7 Kg/m^2 (range 35-70). 76% of the patients had regular followed up (post operative 2 weeks, 1 month and then 3 months periodically) in our center for a period range from 2 to 184 weeks and the data was analyzed retrospectively. All the patients were evaluated by the psychology, nutrition and medical departments to optimize the comorbid conditions in the perioperative period. Upper gastroenteroscopy was performed with biopsies to look for Helicobacter pylori infection and if it was found to treat it with clarithromycin, amoxicillin and omeprazole for two weeks. All surgeries were performed by the same surgeon.

SURGICAL TECHNIQUE

A uniform protocol was applied for all Cases planed for LSG to prevent SSI. It included the following measures: an overnight fast starting at midnight (as a requirement of general anesthetic), Abdominal hair were clipped on the day of surgery, injection cefuroxime 750mg intravenous (IV) on call to Operating room (OR), skin prepared by povidone iodine 10%, Postoperatively the patient was kept nil orally and 2 doses of injection cefuroxime 750mg (IV) eight hourly, patient encouraged for early mobilization. The antibiotic choice was as per the Infection Control Committee guideline of our hospital [3].
An upper gastrointestinal Gastrografin study was performed on first post-operative day and if normal, clear fluids started. The patient was discharged on the second post-operative day.

RESULTS

All cases were completed laparoscopically. We had three patients who developed surgical site infections; one case each of superficial SSI, space infection and organ infection. Two other patients had SSI but the etiology was secondary to staple line leak for one case and mesenteric ischemia for the other. Those cases were thus excluded from the study.

The first case of our study was a 31 year old lady who had superficial SSI. She was not known to have any medical illness prior to surgery and her pre-operative evaluation was unremarkable. A LSG was performed, the pre-operative protocol being followed. There was neither a break in asepsis nor a deviation from surgical technique. She was discharged on the third post-operative day and followed up during the second week without event. Twenty two days post operatively the patient presented in the emergency room (ER) with one day history of abdominal pain at the port site. On clinical examination, she was febrile and had local tenderness at the port site; the rest of the abdomen and systemic examination was unremarkable. Her white cell count was 11,000/cumm blood and hemoglobin 12g/dl. Imaging of the abdominal organs and soft tissue revealed a superficial SSI. Wound debridement was done and the patient was treated with oral cefuroxime. She responded well and was discharged after five days. During her serial follow up, the wound healed with impunity and her systemic examination was normal.

The second case of our study was a 39 year old gentleman who had space infection (peritoneal abscess). He was a bronchial asthmatic on treatment. Preoperative imaging showed hepatomegaly and gastroscopy showed antral gastritis. Other pre-operative evaluation was unremarkable. A LSG was performed, the pre-operative protocol being followed. There was neither a break in asepsis nor a deviation from surgical technique. He was discharged on the third post-operative day and followed up serially without event. Sixteen days post-operatively the patient presented in the (ER) with three day history of fever, abdominal pain localized in the epigastrium associated with vomiting and constipation. On clinical examination, he was febrile and had tenderness in the left hypochondrium; systemic examination was unremarkable. His white blood count was 21,000/cumm blood and hemoglobin 11g/dl. CT imaging of the abdomen showed an abscess collection in the peri-splenic area. Gastrographin study done the next day of admission showed no leak. A computerized tomography guided drain was inserted which drained 200ml of pus. The drainage gradually reduced over four days and the drain was removed after imaging confirmed complete drainage. The pus culture showed no growth. He responded well to treatment, tolerating orally a day after drainage and was discharged after a week. Serial follow ups were unremarkable.

The third case of our study was a 32 year old lady who had organ infection. She was a diabetic on metformin, treated for iron deficiency anemia, prior to surgery and her pre-operative evaluation was unremarkable, except gastroscopy showed mild gastritis. A LSG was performed, the pre-operative protocol being followed. There was neither a break in asepsis nor a deviation from surgical technique. On third post-operative day she had chest pain and dyspnea for which a CT scan was done, there was no evidence of pulmonary embolism. She was discharged on the fourth post-operative day and followed up serially without event. Twenty eight days post-operatively the patient presented to the ER with two day history of generalized abdominal pain, vomiting and fever. On clinical examination, she was febrile and had tenderness in the right hypochondrium; systemic examination was unremarkable. Her white blood count was 16,000/cumm

blood and hemoglobin 11g/dl. Imaging of the abdomen showed a 12 x 5 cm abscess in the right lobe of liver. A CT guided drain was inserted which drained 1600ml of pus over fifteen days and the drain was removed after imaging confirmed complete drainage. The pus culture showed no growth. She responded well to treatment, tolerating orally two days after drainage and was discharged after eighteen days. Serial follow ups were unremarkable.

Table 1. Case reports

	Case 1	Case 2	Case 3
Age	31	39	32
Sex	Female	Male	Female
BMI	45	41	38
Co morbid Diseases	None	Bronchial Asthma	DM
Intra-operative complication	None	None	None
Type of SSI	Superficial	Space / Peritoneal (peri-splenic)	Organ (liver)
Interval between LSG and onset of SSI in days	22	16	28
Type of Drainage	Wound opening	CT guided	CT guided
Antibiotic	Oral Cefuroxime	I/V Cefuroxime	I/V Cefuroxime

DISCUSSION

There are many classification systems for a surgical wound infection, some of which include:

1. A system of classification for operative wounds that is based on the degree of microbial contamination was developed by the US National Research Council group in 1964 [4]. Four wound classes with an increasing risk of SSIs were described: clean, clean-contaminated, contaminated and dirty. The simplicity of this system of classification has resulted in it being widely used to predict the rate of infection after surgery.
2. Classification by Horan and colleagues [9] described briefly above is adopted by the CDC and National Nosocomial Infections Surveillance is widely used these days.
3. Timing: According to the timing [11] of infection wounds infections can be divided into:

a. Early: Within 30 days of the surgical procedure.
b. Intermediate: From 31 to 90 days of the surgical procedure.
c. Late: If the infection develops after 90 days of the surgical procedure.

4. Severity: A wound infection is described as minor if there is discharge without cellulitis or deep tissue destruction, and major if the discharge of pus is associated with tissue breakdown, partial or total dehiscence of the deep fascial layers of the wound, or if systemic illness is present [11].

The results from our series indicate that (LSG) is a safe procedure for morbid obesity. Only three patients of 217 had surgical site infections. (LSG) is classified as a clean-contaminated surgery. In our center we have seen the spectrum of surgical site infections in spite of best efforts to prevent the same.

CONCLUSION

LSG is an excellent standalone bariatric procedure and should be considered as an option for the morbidly obese patient seeking surgical intervention.

ACKNOWLEDGEMENT: None

CONFLICT OF INTEREST:
The authors declare that they have no conflict of interest.

REFERENCES

1. Ashish Nath, Karl A. LeBlanc, Mark G. Hausmann, Kenny Kleinpeter, Brent W. Allain and Roderick Romero. (2010). Laparoscopic Sleeve Gastrectomy. Our First 100 Patients. *JSLS*, 14(4), 502-508.
2. Himpens J, Dobbeleir J, Peeters G. (2010). Long-term results of laparoscopic sleeve gastrectomy for obesity. *Ann Surg*, 252(2), 319-24.
3. Katherine E Hansen, Marc Neff. (2010). Indications for Prophylactic Antibiotics Based On Cultures Taken During Elective Laparoscopic Sleeve Gastrectomy. *UMDNJ-SOM*, 203.
4. Berard F, Gandon J. (1964). Postoperative wound infections: the influence of ultraviolet irradiation of the operating room and of various other factors. *Ann Surg*, 160(1), 1-192.
5. SSI Protocol. OPCS operating procedure code supplement
6. Lilani SP, Jangale N, Chowdhary A, Daver GB. (2005). *Indian journal of medical microbiology*, 23(4), 249-252.
7. Cruse PJ, Foord R. (1980). The epidemiology of wound infection.A 10-year prospective study of 62,939 wounds. *Surg Clin North Am*, 60(1), 27-40.
8. Cruse PJE. (1992). Classification of operations and audit of infection. In: Taylor EW, editor. Infection in Surgical Practice. Oxford: Oxford University Press, 1-7.

9. Horan TC, Gaynes RP, Martone WJ, Jarvis WR, Emori TG. (1992). CDC definitions of nosocomial surgical site infections, a modification of CDC definitions of surgical wound infections. *Infect Control HospEpidemiol*, 13(10), 606-8.
10. Lee SY, Lim CH, Pasupathy S, Poopalalingam R, Tham KW, Ganguly S, Wai CH, Wong WK. (2011). Laparoscopic sleeve gastrectomy: a novel procedure for weight loss. *Singapore Med J*, 52(11), 794-800.
11. Peel ALG. (1992). Definition of infection, Taylor EW. Infection in Surgical Practice, Oxford, Oxford University Press, 82-87.