Chest Heart Journal
Vol. 42, No. 2, July 2018

ORIGINAL ARTICLE

Burden of Laparoscopic Port Site Mycobacterium Tuberculosis Infection in Bangladesh

Md.Ahashan Habib[1], Syeda Farhana Naznin[2], Md. Aminul Islam Joarder[3], Md.Abdullah Al Mujahid[4], Md.Abu Raihan[5], Md. Ashraful Islam[6], Md. Mofizur Rahman Mia[7], Bijoy Krishna Das[8]

Abstract:

Background: *Port site infection is a previling, chronic nagging treatment refractory complication of laparoscopic surgery .It neutralizing the advantage of minimally invasive surgery and increase morbidity, treatment cost of the patients,leading to loss of confidence on operating surgeon. Source of port site infection with non-tuberculas and tuberculas mycobacterium are also being reported from different parts of the world.*

Objective: *This study is carried out to see the prevalence of port site Mycobacterium Tuberculosis infection in Bangladesh perspective.*

Result: *The present study pertains to 150 patients from Dhaka city Bangladesh who underwent laparoscopic surgery in BSMMU hospital .Total 8 (5.33%) patients shows port site infection ,among these 6 (4%) had underwent laparoscopic cholecystectomy . In the present study all the port site infections were diagnosed to be due to mycobacterium tuberculosis .The main source of M tuberculosis is exogenous and is due to the reused laparoscopic instruments which was sterilized with 2% gluteraldehyde .*

Conclusion: *It has been reported that Mycobacterium Tuberculosis have become resistant to sterilization with gluteraldehyde. Thus proper sterilization of the laparoscopic instruments is of utmost importance in preventing infectious complications and ideally autoclaving should be used for this purpose.*

Key words*: Port site, Laparoscopic surgery,Sterilization,Mycobacterium Tuberculosis.*

[Chest Heart Journal 2018; 42(2) : 88-91]

DOI: http://dx.doi.org/10.33316/chab.j.v42i2.2019584

Introduction:

The aim of laparoscopic surgery was to enhance the cosmetic ,outlook of surgical field, lessen the post operative pain and duration of hospital stay so as to bring about reduction in magnitude of convalescence .Though it is a key hole surgery

1. Medical Officer, 250 Beded, TB Hospital, Shyamoli, Dhaka, Bangladesh.
2. Medical Officer, 250 Beded, TB Hospital, Shyamoli, Dhaka, Bangladesh.
3. Associate Professor, Department Surgery, BSMMU, Dhaka, Bangladesh.
4. Junior Consultant (Respiratory Medicine) , 250 Beded, TB Hospital, Shyamoli, Dhaka, Bangladesh.
5. Deputy Director & Project Director & Associate Professor (Respiratory Medicine), 250 Beded, TB Hospital, Shyamoli, Dhaka, Bangladesh.
6. Medical Officer, Department Surgery, BSMMU, Dhaka, Bangladesh.
7. Associate Professor of Thorasic Surgery, National Institute of Diseases of the Chest & Hospital, Mohakhali, Dhaka, Bangladesh.
8. Assistant Professor of Respiratory Medicine, Abdul Malek Ukil Medical College, Noakhali, Bangladesh.

Correspondence to: Dr. Md. Ahashan Habib, Medical Officer, 250 Beded, TB Hospital, Shyamoli, Dhaka, Bangladesh. Mobile: 01712-503159, E-mail: rupsa27@gmail.com

Submission on: 13 May, 2018 **Accepted for Publication:** 21 June, 2018

Available at http.//www.chabjournal.org

but when these small wound get coursed with infections with a dragging and indolent course, the entire purpose of decreasing morbidity goes in to vain.In Bangladesh tuberculosis is one of the major health problem, among which 1/5th are extra pulmonary. It has been noted that port site TB in usually due to improper sterilization of the laparoscopic instruments ,but few case report publish which has attributed port site TB to an endogenous source[1].Port site TB has been reported following laparoscopic cholecystectomy[2,3], appendectomy[4], urological surgery[5].Review of literature shows that the problem of port site infection is a global one and not restricted to developing countries only ,no doubt the incidence in developed countries is far less in copmparison to developing nations[6].In the present study 150 cases of laparoscopic surgeries, 8 cases are being reported with port site infection by mycobacterium tuberculosis.

Materials and methods:

The present study includes 150 patients who underwent laparoscopic surgeries for various indications in a BSMMU hospital in Dhaka city.This study was conducted for a period of 24 months march 2014 to February 2016.All those patients who underwent laparoscopic surgery during this period were included in the study and those patients ,who were converted to open procedure were excluded from the study . In all the patients the pre-operative skin preparation done by on table shaving method and use providone iodine wash.The patients were admitted in the morning of the day of surgery and one pre-operative dose of ceftriaxone 1 gm at the time of induction and two subsequent postoperative dose of the same were given 12 hourly and then it convert in to oral cefixime preparation for total 7 days. All surgeries were done under general anesthesia. Pneumo-peritonium was created through open method in supra or infra umbilical transverse incision. Through the incision 10mm primary trocar was introduced in to peritoneal cavity.The time duration from first incision to end of the procedure was calculated.All the specimens of gall bladder ,appendix,and ovarian cyst were extracted through the umbilical port,and used endobag in ovarian cyst and appendix extraction.All laparoscopic instruments were sterilized by 2% gluteraldehyde solution with a contact time of 20 minutes .Before surgery all the instruments were washed with normal saline.Gluteraldehyde solution was replaced after every 15 days.

All patients were monitored for superficial and deep port site infections .Port site infections were included those occurring within 30 days of an operation[7].Wounds were assed clinically on 3rd post operative day and after 7days of operation .In case of infection had occurred , pus was sent for culture and sensitivity ,dressing and cleaning of wounds were done regularly and a course of empirical antibiotic was started till the culture sensitivity report was received .The infected wounds were re examined once weekly for four weeks or more ,depending on the response of antibiotic ,if no response was seen ,pus/discharge was sent for AFB staining. In case of AFB positive ,pus was sent for culture in L J media to rule out mycobacterium tuberculosis.In case of sinuses in addition to above, excision of the sinuses tract were done and sent for histopathological examination.

Result:

Out of 150 laparoscopic surgeries ,142 were of laparoscopic cholecystectomy, 2 of laparoscopic appendectomy,and 6 of laparoscopic ovarian cystectomy .Only 8(5.3%) of patients developed port site infections ,of which 6 undergone laparoscopic cholecystcetomy and 1 underwent appendicectomy and another 1 underwent ovarian cystectomy .Superficial infection was seen 6 cases (75%) and deep infection seen in 2(25%) patients .All patients present with pus discharge,erythrema ,induration with mild tenderness but no fever .Nodule and discharging sinus were only seen in deep infections.The sinuses involved the muscle plane and did not involve the peritoneum.The infections did not respond to second or third generation cephalosporins.

The umbilical port through which all specimens were extracted ,shows infection in 5(62.5%) cases thus being the most frequent.The infection involving in epigastric port 2(25%) patients and both lateral port in 1(12.5%) patient.The operative findings in cases of port site infection

in laparoscopic cholecystectomies, appendectomies and ovarian cystectomies ,including acute cholecystitis in 2(25%),chronic cholecystitis with thick walled gall bladder in 4(50%) patients and acute appendicitis in 1(12.5%) and ovarian cyst in 1(12.5%) patient .In all patients with port site infection or without port site infection the operative time varied from 45-50minutes,except ovarian cystectomies where it was 50 -65 minutes .

Pus for culture was taken from both superficial and deep infection wounds .Culture and sensitivity done were negative for both gram positive and negative bacteria .AFB staining of the same pus was positive for acid fast bacilli.In culture done on LJ media , mycobacterium tuberculosis was isolated from all 8 cases of port site infections. Histopathology of the excised sinuses revealed typical granulomas formed of central caseation necrosis surrounded by epitheloid cells and lymphocytes.Langhans giant cells were also found.All the patients with port site infection recovered within 2-3 months of starting of first line anti TB drugs ,but the treatment was continued for six months.

Table-1

Demography

Age (Year)	Male	Female
20-40	22	50
41-60	19	32
> 60	11	16

Demography shows that, young age group & female sex predominant.

Table-2

Type of laparoscopic surgery (N=150)

Laparoscopic surgery	Male	Female	Numbers
Cholecystectomy	51	91	142
Ovarian cystectomy	0	6	6
Appendicectomy	1	1	2
Total	52	98	150

Laparoscapic Cholecystectomy & female sex predominant.

Table-3

Port site Mycobacterium Tuberculosis infection rate

Port	Frequency	Percentage
Umbilical port	5	62.5%
Epigastric port	2	25%
Lateral port	1	12.5%

Umbilical port site infection is predominant.

Table-4

Procedure	N	Port site infection (%)	P Value
Laparoscopic Cholecystectomy	142	6 (4.22%)	> 0.05 NS
Ovarian Cystectomy	6	1 (16.66%)	> 0.05 NS
Appendectomy	2	1 (50%)	> 0.05 NS

P Value > 0.05 non significant.

Discussion:

On review of literature the incidence of port site infection has been seen to be variable,it has been reported as low as 2.3% from Israel[8] as high as 9.2% in cairo[9].In the present study it was recorded as 5.3% which is similar to the one reported by Waqar J Alam 5.7%(8)Den Hoed PT5.3%[10] ,slightly higher percentage has been reported by Shindholimath VV 6.3%[11]. The CDC classification of SSI categories these wound in two sub types superficial and deep. The superficial one include those involve skin and subcutaneous tissue ,where as deep one pertain to fascia, muscle and organ or space infection[12].In the present study the wounds predominantly belonged to the superficial category (75%).The percentage of deep infections extending in to muscle plane was (25%), which was similar the one reported by Waqar A Jan et al 2008[8].Overall it has been noted that port site infections are mostly restricted to superficial skin infection.The causative agents of these port site infections are mostly mycobacteria and it having been most reported in developing countries[9]. It is interesting to note that in the present study M tuberculosis was encountered in all port site infections.M tuberculosis has been reported to cause port site infection by Ramesh et al [13]. Nader A Elhamid et al 2012 in their study,report NTM in 4 cases out of 75.

The way of such type of port site tuberculosis infection generally occurs,

1). From an exogenous source, 2). From an endogenous source(secondary tuberculosis) 3). From a haematogenous source.

The most common practice of laparoscopic instruments "sterilization" in our country has been to immerse instruments in 2% glutaraldehyde for 20 min. Although sterilization is defined as "the complete elimination of all forms of microbial life". It is now widely agreed that 2% gluteraldedhde achieves high level of disinfection and not sterilization.

This has been further reinforced by Griffiths et al ,who have highlighted the failure of a 20 min instruments soak in 2% glutareldehyde to sterilize laparoscopic instruments[14].Another study, mycobacterium TB was present in one of five scopes after 45 min exposure.In present study the umbilical port showed infection in maximum case (62.5%) which is in conformity with the finding of Sasmal et al[15] , it is suggested by some authors that the port used for extraction of specimens is the most commonly involved port in infection because of spillage.Therefore the cause of infection seems to be exogenous and most probably the contaminated instruments. Time taken for all the surgeries in the present study was almost same hence this factors is not regarded to be involved in causing the infection in the present case.

References:

1. Cunnigaiper ND, Venkatraman S port site tuberculosis :Endogenous infection?Sung Infect(Larchmrt)2010;11:77-8.
2. Tauro LF, Satish RB ,Matris JJ,Divakar HS.port site tuberculosis :a rare complication following laparoscopic cholecystectomy .Indian J Surg.2005;67: 104-5.
3. Ramesh H, Prakash K,Lekha V, Jacob G,Venugopal A,Venugopal B,port site tuberculosis after laparoscopy:Report of eight case.Surg Endosc.2003;17:930-2.
4. Bhandrakar DS,Bhagwat S,Punjani R,por-site infection with mycobacterium chelonei following laparoscopic appendicectomy. Indian J Gastroenterol.2001;20:247-8.
5. Rahul Gupta,Arati Mahajan , Chaman Gupta.post per-cutaneous nephrolithotripsy nephrostomy site tuberculosis :a report of 6 cases . Urol Ann.2012;4(1):41-4.
6. William E G Thomas.Basic surgical skills and anastomoses .In Normans S William etal.fditors.Baily &Love's short practice of surgery.24th ed.London:Arnold 2004. pp118-32.
7. Horan TC ,Gaynes RP,Martone WJ,et al.CDC definitions of nosocomial surgical site infections,1992:A modification of CDC definitions of surgical wound infections, Infect control Hosp Epidemiol 1992; 13 : 606-8.
8. Waqar Aj,Sabir Ali I,et al.The frequency of port site infection following laparoscopic cholecystectomies.JPMI 2008;22:66-70.
9. Nader Abd-Elhamid ,Khaled Kasim, Anahtar Kelimeler.port site Non-tuberculous Mycobacterial Infection after Laparoscopic cholecystectomy:A case series.TAF Prev Med Bull 3013;12:481-484.
10. Den Hoed PT , Boelhourwer RU,Veen HF,et al.Infections and bacteriological data after laparoscopic and open gallbladder surgery.J Hosp Infect 1998;39:27-37.
11. Sharma AK,Sharma S,Sharma R,port site infection In laparoscopic surgeries.Indian Med Gazette 2013;224-29.
12. Centers of Disease Control and prevention.The National Healthcare Safety Network(NHSN) Manual:Patient safety component Atlanta ,GA:Division of Healthcare Quality Promotion.National Center for Emerging and Zoonotic Infection Disease Available from: URL : http:// www.cdc.gov/nhsn/acute-care-hospital/ index.html.2015.
13. Ramesh H,Prakash K,Lekha V,et al.port site tuberculosis after laparoscopy:report of eight cases .Surg Endosc 2003;17:930-32.
14. Griffith PA,Babb JR,Bradley CR,Fraise AP.Glutaraldehyde-resistant Mycobacterium chelonae from endoscope washer disinfectors.J Appl Microbial. 1997; 82:519-26.
15. Sasmal PK,Mishra TS,Rath S,et al.port site infection in laparoscopic surgery :A review of its management.WJCC 2015;3-18.