

Laparoscopic cholecystectomy in obese diabetic women

Sadam Hussain ^{1,*} and Amna Abbasi ²

¹ Department of Thoracic Surgery, first affiliated hospital of Xinjiang Medical University, Xinyi Road, Urumqi, Xinjiang, China.

² Department of Clinical Medicine, Xinjiang Medical University, Xinyi Road, Urumqi, Xinjiang, China.

World Journal of Biology Pharmacy and Health Sciences, 2024, 17(02), 163–169

Publication history: Received on 30 December 2023; revised on 06 February 2024; accepted on 09 February 2024

Article DOI: <https://doi.org/10.30574/wjbphs.2024.17.2.0067>

Abstract

Background: Diabetes mellitus is associated with an increased risk of complications after abdominal surgery. We evaluated retrospectively the impact of preoperative risk factors and outcome of diabetic patients after laparoscopic cholecystectomy (LC) compared with open cholecystectomy (OC) for symptomatic gallstones.

Objective: To determine Laparoscopic cholecystectomy in obese diabetic women

Methods: A cross-sectional study was conducted at Shifa International hospital Islamabad Pakistan, which was performed between April 2020 and March 2022. The total number of patients in our study were 100. The number of female patients were 95 and male were 5. In 100 consecutive patients who underwent for blood tests and some diagnostic tests too. We included only old age people in our study age above than 40 years. We took BMI for every patients. Data was tabulated and analyzed by SPSS.

Results: In a current study total 100 patients were enrolled. The minimum age of patients were 40 and the maximum age of the patients were 80. The mean age were 11.81 ± 10.2 years. The minimum BMI were 30 and maximum BMI were 40. The mean BMI were 3.041 ± 13.5 . The minimum Operation hours were 1 and maximum Operation hours were 2. The mean of the operation hours were 1.045 ± 3.76 .

Fig 1, shows us gender distribution, in which 95 were female patients while 5 were male patients. The frequency of male patients were 5 and the percentage were 5. The frequency of female patients were 95 and its percentage were 95. The frequency of nausea patients were 16 and its percentage were 16. The frequency of vomiting patients were 84 and its percentage were 84. The frequency of sever right abdominal patients was present in 97 patients and was not present in 3 patients. The frequency of diabetes mellitus 97 and its percentage were 97 while the frequency of diabetes mellitus were not present in 3 patients.

75% of patients were cholelithiasis while 25% of patients were not affected by cholelithiasis. The second figure shows 18 % of patients have choledocholithiasis and 82 % of patients were not affected by this disease. The third figure shows that 3% of patients have cholecystitis while 97% of patients were not affected by this type of disease. The fourth figure shows that type 2 Diabetes mellitus were present in 97% of patients while were not present in 3% of patients.

Conclusion: Laparoscopic cholecystectomy as a new technique for the treatment of cholecystectomy. The main benefit of laparoscopic cholecystectomy for diabetic patients is that the wound recovers fast and its no major complications. In our study females were as compared to males. The operation time is from 1 to 2 hours on laparoscopic Cholecystectomy.

* Corresponding author: Sadam Hussain

Keywords: Diabetes Mellitus (DM); Laparoscopic Cholecystectomy; Obesity; Cholecystocholedocholithiasis (CCL); Cholelithiasis.

1. Introduction

According to estimates from the International Diabetes Federation (IDF), 415 million people worldwide suffer from diabetes, with type 2 diabetes mellitus (T2DM) accounting for 91% of cases [1]. 8.8% of the world's population has diabetes, and the IDF estimates that by 2040, there will be 642 million cases worldwide.[1] Diabetes, often known as diabetes mellitus, is a metabolic illness characterized by persistently elevated blood sugar levels (World Health Organization, 2014).[2] The signs and symptoms include hyperosmolar coma, increased thirst, hunger, and frequent urination. [3] Obesity is become an international issue. The rising number of fat people has spread throughout the country, not just in the US.[4] Cholelithiasis is a significant issue in contemporary medicine. The most frequent operations in general surgery are gallbladder surgeries for cholelithiasis. At the moment, laparoscopic procedures are used to perform most cholecystectomies. According to recent epidemiological research, persons with liver disorders and cardiac insufficiency are more likely to develop gallstone disease.[5] It has been discovered that the frequency of cholelithiasis in diabetic patients is two to three times higher than in subjects without diabetes.[6] A number of variables, including prior abdominal surgery, acute infection, coronary heart disease, diabetes mellitus, and obesity, have been linked to an increased risk of operative morbidity in open cholecystectomy (OC).[7] Factors that raise the risk of intraoperative laparoscopic complications and the need for a conversion include male gender, age, the presence of gallbladder empyema, acute inflammation of the gallbladder, and preoperative ultrasonographic findings of increased gallbladder wall thickness. Systemic inflammatory response syndrome is defined by elevated inflammatory parameters, such as elevated white blood cell count and C-reactive protein. [8,9] Following every surgical treatment, postoperative discomfort, nausea, and vomiting are among the most common consequences. Between 46 and 72 percent of patients experience postoperative nausea and vomiting (PONV), and these symptoms continue despite decades of progress in understanding the pathophysiology of pain and PONV as well as advancements in less invasive procedures.[10,11] By using exact surgical technique, careful tissue dissection, and excellent visualization of anatomical landmarks, injuries during laparoscopic cholecystectomy can be avoided. In a difficult situation, intraoperative cholangiography should be used.[12,13] Throughout the world, one of the most popular general surgical procedures is laparoscopic cholecystectomy (LC). It is linked to a 10 percent overall complication rate and an increased risk of biliary damage. [14,15] One cannot overstate the significance of LC's safe operation.[16] Cholecystocholedocholithiasis (CCL), another name for the condition that occurs when gallstones and common bile duct (CBD) stones coexist, is one of the most prevalent clinical conditions that affects 8–20% of gallstone patients.[17,18,19,20] Currently, the most common minimally invasive method of treating CCL involves either endoscopic retrograde cholangiopancreatography (ERCP) plus laparoscopic cholecystectomy (ERCP+LC) or laparoscopic CBD exploration (LCBDE) plus laparoscopic cholecystectomy (LCBDE+LC).[21, 22] A common occurrence is acute cholecystitis (AC), for which laparoscopic cholecystectomy (LC) is now the accepted course of treatment.[23,24]

2. Materials and methods

A cross-sectional study was conducted at Shifa International hospital Islamabad Pakistan, which was performed between April 2020 and March 2022. The total number of patients in our study were 100. The number of female patients were 95 and male were 5. In 100 consecutive patients who underwent for blood tests and some diagnostic tests too. We included only old age people in our study age above than 40 years. We took BMI for every patients. Data was tabulated and analyzed by SPSS.

3. Results

Table 1 Mean age, BMI and Operation time of all the enrolled patients (n=100)

Variables	Minimum	Maximum	Mean±SD
Age (Years)	40	80	11.81±10.2
BMI (KG/m ²)	30	40	3.041±13.5
Operation hours	1	2	1.045±3.76

In a current study total 100 patients were enrolled. The minimum age of patients were 40 and the maximum age of the patients were 80. The mean age were 11.81±10.2 years. The minimum BMI were 30 and maximum BMI were 40. The

mean BMI were 3.041 ± 13.5 . The minimum Operation hours were 1 and maximum Operation hours were 2. The mean of the operation hours were 1.045 ± 3.76 .

Table 2 Patient characteristics of enrolled patients (n=100)

Variables		
Gender	Frequency	Percentage
Male	95	95
Female	5	5
Nausea/ vomiting		
Nausea	16	16
Vomiting	84	84
Sever right Abdominal Pain		
YES	97	97
NO	3	3
Diabetes Mellitus		
YES	97	97
NO	3	3
Cholelithiasis		
YES	75	75
NO	25	25
Choledocholithiasis		
YES	18	18
NO	82	82
Cholecystitis		
YES	3	3
NO	97	97
Complications		
Bile leak	1	1
Bleeding	3	3
Surgical site infection	10	10
No major comlication	86	86
Laparoscopic Cholecystectomy		
YES	96	96
NO	4	4

In table 2, The frequency of male patients were 95 and the percentage were 95. The frequency of female patients were 5 and its percentage were 5. The frequency of nausea patients were 16 and its percentage were 16. The frequency of vomiting patients were 84 and its percentage were 84. The frequency of sever right abdominal patients was present in 97 patients and was not present in 3 patients. The frequency of diabetes mellitus 97 and its percentage were 97 while the frequency of diabetes mellitus were not present in 3 patients. The frequency of cholelithiasis were present in 75 patients and its percentage were 75. The frequency of cholelithiasis were not present in 25 patients and its percentage

were 25. The frequency of choledocholithiasis were present in 18 patients and its percentage were 18. The frequency of choledocholithiasis were not present in 82 patients and its percentage were 82. The frequency of cholecystitis were present in 3 patients and its percentage were 3. The frequency of cholecystitis were not present in 97 patients and its percentage were 97. The frequency complication of bile leak were 1 and its percentage were same. The frequency of bleeding were 3 and its percentage were 3. The frequency of surgical site infection were 10 and its complications were same. The frequency of no major complication were 86 and its percentage were 86 too. The frequency of laparoscopic cholecystectomy were done in 96 patients and its percentage were 96% while the frequency of laparoscopic cholecystectomy were not done in 4 patients and its percentage were 4%.

Table 3 Mean and SD of Blood Test and BMI of all the enrolled patients (n=100)

	Means	SD
Blood Test		
ALP (IU/L)	210.9	40.68
ALT (u/L)	237.0	60.4
BMI (KG/M2)	35.11	3.04

In Table 3, The mean of the ALP blood test were 210.9 (IU/L) and its SD value were 40.68. The mean of the ALT blood test were 237.0(u/L) and its SD value were 60.4 (u/L). The mean of BMI were 35.11 (Kg/m²) and its SD value were 3.04 (u/L).

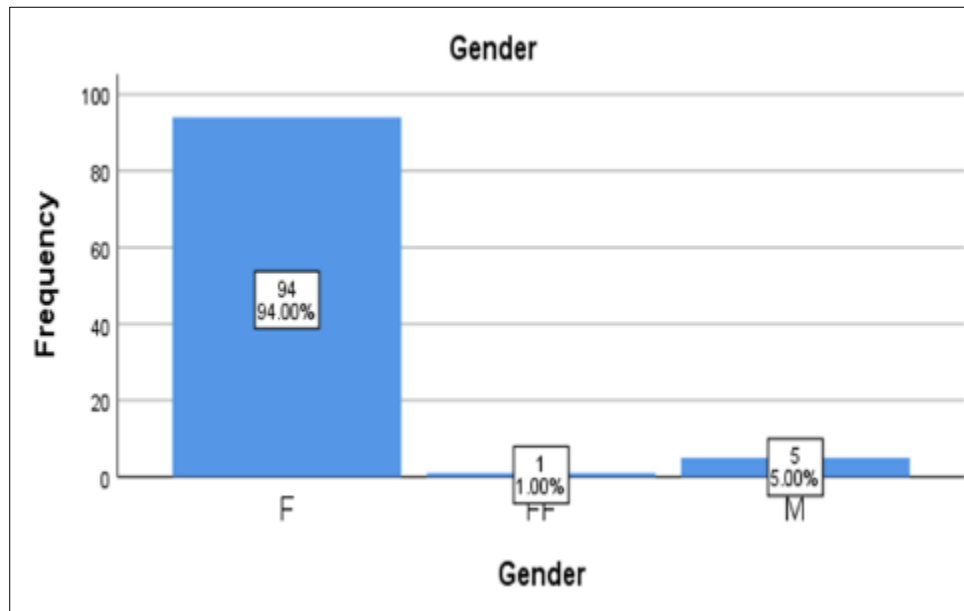


Figure 1 Gender distribution (n=100)

Fig 1, shows us gender distribution, in which 95 were female patients while 5 were male patients

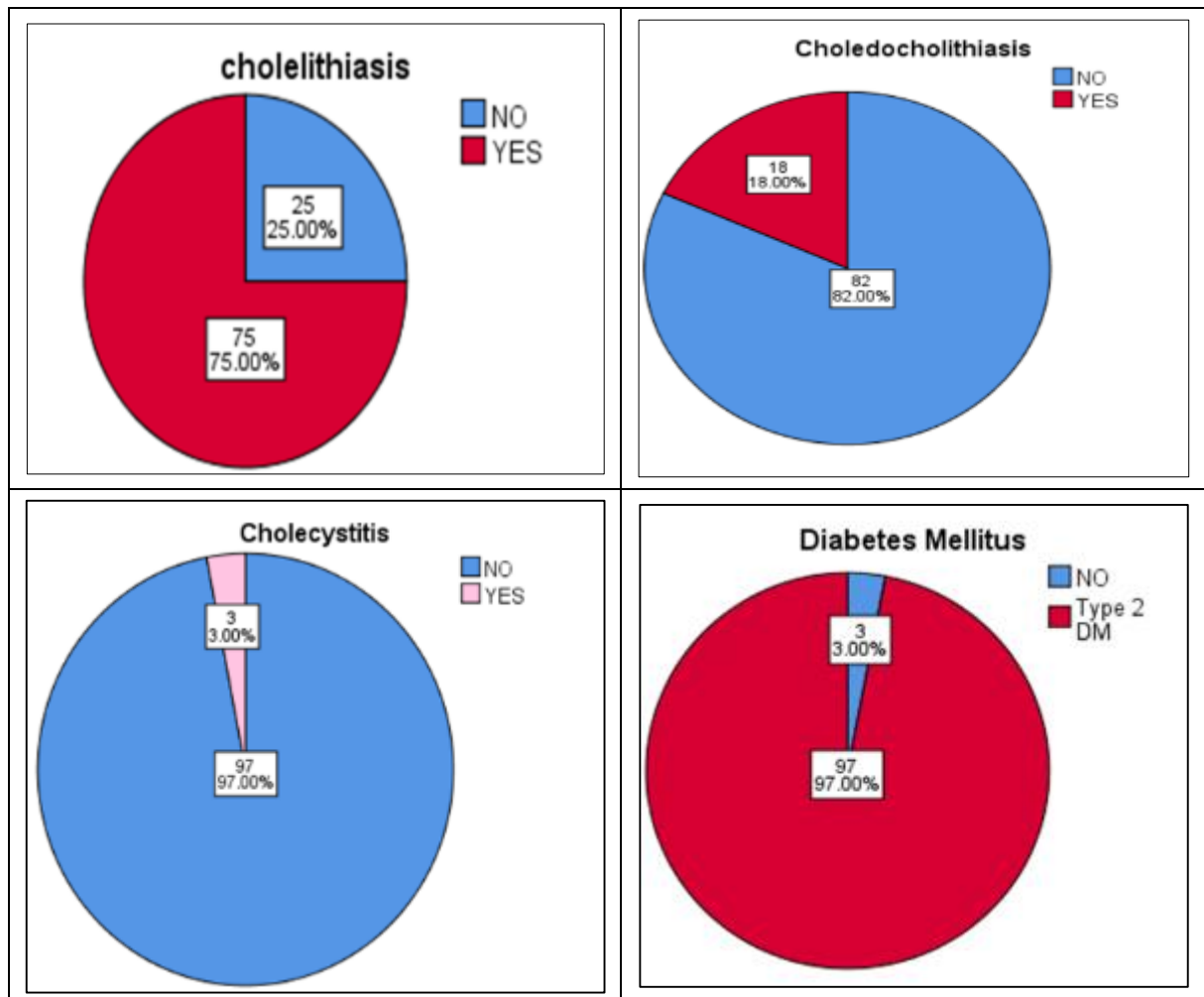


Figure 2 Pie chart of Cholelithiasis, cholecystitis, choledocholithiasis and Diabetes mellitus

In Fig 2, the first figure shows 75% of patients were cholelithiasis while 25% of patients were not affected by cholelithiasis. The second figure shows 18 % of patients have choledocholithiasis and 82 % of patients were not affected by this disease. The third figure shows that 3% of patients have cholecystitis while 97% of patients were not affected by this type of disease. The fourth figure shows that type 2 Diabetes mellitus were present in 97% of patients while were not present in 3% of patients.

4. Discussion

Lately, early LC has established itself as the norm for treating AC. However, extensive local inflammation might make it difficult for surgeons to perform LC for AC, which can raise the risk of postoperative complications such bile leakage, common bile duct injury, and bowel injury. [25,26,27] Obesity is a global issue at the moment. It has grown to be a bigger issue in Japan as well as in Western nations. According to our research, the percentage of women and young individuals increases with BMI. This appears to be a worldwide trend and is consistent with the findings of a prior study.[28] Hospital stays varied in duration from 1 to 13 days (with a median of 2 days and a range of 1 to 3 days for non-difficult cases) and a minimum of 4 days and a maximum of 13 days recorded for complicated cases.[29] It is debatable if gallbladder perforation during LC affects the emergence of postoperative infection. Gallbladder stone cases have a positive bile culture rate that ranges from 10% to 20%. [30]

5. Conclusion

Laparoscopic cholecystectomy as a new technique for the treatment of cholelithiasis. The main benefit of laparoscopic cholecystectomy for diabetic patients is that the wound recovers fast and its no major complications. In our study females were as compared to males. The operation time is from 1 to 2 hours on laparoscopic Cholecystectomy.

Compliance with ethical standards

Acknowledgments

I am very thankful to doctor Amna Abbasi.

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of ethical approval

This manuscript is in line with the principles of the Declaration of Helsinki. Approval was granted by the Ethics Committee of First Affiliated Hospital of Xinjiang Medical University.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

Author's contribution

Sadam Hussain and Amna Abbasi has contributed equally to this work.

References

- [1] International Diabetes Federation. *idf diabetes atlas*. 7th ed. Brussels: International Diabetes Federation, 2015.
- [2] WHO. (2014). *About diabetes*. World Health Organization: Retrieved April 4, 2014.
- [3] Kitabchi, A. E., Umpierrez, G. E., Miles, J. M., & Fisher, J. N. (2009). Hyperglycemic crises in adult patients with diabetes. *Diabetes Care*, 32(7), 1335–1343
- [4] Singh, G. K., Siahpush, M., Hiatt, R. A. & Timsina, L. R. Dramatic increases in obesity and overweight prevalence and body mass index among ethnic-immigrant and social class groups in the United States, 1976–2008. *J. Community Health* 36, 94–110 (2011).
- [5] Méndez-Sánchez, N., Bahena-Aponte, J., Chávez-Tapia, N.C., Motola-Kuba, D., Sánchez-Lara, K., Ponciano-Rodríguez, G., Ramos, M.H., Uribe, M. Strong association between gallstones and cardiovascular disease. *Am. J. Gastroenterol.* 2005, 100, 827–830.
- [6] Pagliarulo M, Fornari F, Fraquelli M (2004) Gallstone disease and related risk factors in a large cohort of diabetic patients. *Dig Liver Dis* 36:130–134
- [7] Carbonell AM, Lincourt AE, Kercher KW, Matthews BD, Cobb WS, Sing RF, Heniford BT (2005) Do patient or hospital demographics predict cholecystectomy outcomes? A nationwide study of 93,578 patients. *Surg Endosc* 19:767
- [8] Kholdebarin R, Boetto J, Harnish JL, et al. Risk factors for bile duct injury during laparoscopic cholecystectomy: a case - control study. *Surg Innov.* 2008, 74:985–7.
- [9] Stanistic V, Milicevic M, Kocev N, et al. Prediction of difficulties in laparoscopic cholecystectomy on the base of routinely available parameters in a smaller regional hospital. *Eur Rev Med Pharmacol.* 2014, 18:1204–1211.
- [10] Pflbaum JL, Chen C, Mehta SS, Gan TJ Postoperative pain experience: results from a national survey suggest postoperative pain continues to be undermanaged. *Anesth Analg* (2003) 97(2): 534.
- [11] Gan TJ Risk factors for postoperative nausea and vomiting. *Anesth Analg* (2006) 102(6): 1884.
- [12] Nuzzo G, Guiliante F, Giovannini I, et al. Bile duct injury during laparoscopic cholecystectomy: results of an Italian national survey on 56591 cholecystectomies. *Arch Surg.* 2005, 140:986–92.
- [13] Diamantis T, Tsigris C, Kiriakopoulos A, et al. Bile duct injuries associated with laparoscopic and open cholecystectomy: an 11- year experience in one institute. *Surg Today.* 2005, 35:841–5.

- [14] Berci G, Hunter J, Morgenstern L, Arregui M, Brunt M, Carroll B, Edey M, Fermelia D, Ferzli G, Greene F, Petelin J, Phillips E, Ponsky J, Sax H, Schwaitzberg S, Soper N, Swanstrom L, Traverso W. Laparoscopic cholecystectomy: first, do no harm, second, take care of bile duct stones. *Surg Endosc.* 2013, 27:1051–1054.
- [15] Barrett M, Asbun HJ, Chien HL, Brunt LM, Telem DA. Bile duct injury and morbidity following cholecystectomy: a need for improvement. *Surg Endosc.* 2018, 32:1683–1688.
- [16] Hugh TB. New strategies to prevent laparoscopic bile duct injury--surgeons can learn from pilots. *Surgery.* 2002, 132:826–835.
- [17] Collins C, Maguire D, Ireland A, Fitzgerald E, O'Sullivan GC (2004) A prospective study of common bile duct calculi in patients undergoing laparoscopic cholecystectomy: natural history of choledocholithiasis revisited. *Ann Surg* 239(1):28–33.
- [18] Tazuma S (2006) Gallstone disease: epidemiology, pathogenesis, and classification of biliary stones (common bile duct and intrahepatic). *Best Pract Res Clin Gastroenterol* 20(6):1075–1083.
- [19] European Association for the Study of the Liver. Electronic address eee (2016) EASL Clinical Practice Guidelines on the prevention, diagnosis and treatment of gallstones. *J Hepatol* 65 (1):146–181.
- [20] Parra-Membrives P, Martinez-Baena D, Lorente-Herce J, Jimenez-Riera G (2018) Comparative study of three bile duct closure methods following laparoscopic common bile duct exploration for choledocholithiasis. *J Laparoendosc Adv Surg Tech Part A* 28(2):145–151
- [21] Zhu HY, Xu M, Shen HJ, Yang C, Li F, Li KW, Shi WJ, Ji F (2015) A meta-analysis of single-stage versus two-stage management for concomitant gallstones and common bile duct stones. *Clin Res Hepatol Gastroenterol* 39(5):584–593.
- [22] Dasari BV, Tan CJ, Gurusamy KS, Martin DJ, Kirk G, McKie L, Diamond T, Taylor MA (2013) Surgical versus endoscopic treatment of bile duct stones. *Cochrane Database Syst Rev* 12: Cd003327.
- [23] Yamashita Y, Takada T, Strasberg SM, Pitt HA, Gouma DJ, Garden OJ, Büchler MW, Gomi H, Derveniz C, Windsor JA, Kim SW, de Santibanes E, Padbury R, Chen XP, Chan AC, Fan ST, Jagannath P, Mayumi T, Yoshida M, Miura F, Tsuyuguchi T, Itoi T, Supe AN. Tokyo guideline revision committee. TG13 surgical management of acute cholecystitis. *J Hepatobiliary Pancreat Sci.* 2013, 20:89–96.
- [24] Johansson M, Thune A, Nelvin L, Stiernstam M, Westman B, Lundell L. Randomized clinical trial of open versus laparoscopic cholecystectomy in the treatment of acute cholecystitis. *Br J Surg.* 2005, 92:44–9.
- [25] Gurusamy K, Samraj K, Gluud C, Wilson E, Davidson BR. Meta-analysis of randomized controlled trials on the safety and effectiveness of early versus delayed laparoscopic cholecystectomy for acute cholecystitis. *Br J Surg.* 2010, 97:141–50.
- [26] Borzellino G, Sauerland S, Minicozzi AM, Verlato G, Di Pietrantonj C, de Manzoni G, Cordiano C. Laparoscopic cholecystectomy for severe acute cholecystitis. A meta-analysis of results. *Surg Endosc.* 2008, 22:8–15.
- [27] Lee SW, Yang SS, Chang CS, Yeh HJ. Impact of the Tokyo guidelines on the management of patients with acute calculous cholecystitis. *J Gastroenterol Hepatol.* 2009, 24:1857–61.
- [28] Paaanen, H. et al. Impact of obesity and associated diseases on outcome after laparoscopic cholecystectomy. *Surg. Laparosc. Endosc. Percutan. Tech.* 22, 509–513 (2012).
- [29] Simopoulos C, Botaitis S, Polychronidis A, Tripsiani G, Karayiannakis AJ. Risk factors for conversion of laparoscopic cholecystectomy to open cholecystectomy. *Surg Endosc.* 2005, 19:905–9.
- [30] Chang WT, Lee KT, Wang SR, et al. Bacteriology and antimicrobial susceptibility in biliary tract disease: an audit of 10-year's experience. *Kaohsiung J Med Sci.* 2002, 18: 221-228.