CODEN [USA]: IAJPBB ISSN: 2349-7750

INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES

http://doi.org/10.5281/zenodo.2549674

Available online at: http://www.iajps.com ***Review Article***

ROLE OF BARIATRIC SURGERY IN CHOLELITHIASIS DEVELOPMENT: A SIMPLE LITERATURE REVIEW

Alanazi,Waleed Shuwayyikh S[1], Nafea Hamoud Alanazi[1], Mushari Aber F Alonazi[1], Abdulsalam Abdulmohsen Almofadhli[2], Abdulrahman Saeed Saad Alharbi[2], Najwa Hediban Alamri[3], Maan Khaled Baamer[3], Khalid Mousa Qasem Kulaybi[4], Abdulrahman Mohsen Althagafi[5], Hussain Bani H. Alrowaily[6], Maryam Mutarid M Alruwaili[7], Omnia Abdullah Bahadi[8], Zainab Albahrani[9], Alanoud Ali Alhamed[10], Abrar Abdu Abodyah[11], Abdullah Saud Abdullah Alfaraj[12]

[1]Aljouf University, [2]University of Hail, [3]King Abdulaziz University, [4]Jazan University, [5]Umm Al- Qura University, [6]Imam Abdurahman bin Faisal University, [7]Norther Border University, [8]Medical University of Lublin, [9]King Faisal University, [10]Ibn Sina National College, [11]King Khalid University, [12]Mansoura University

Abstract:

Background: *Obesity is a common cause of significant morbidity in the population. In addition, it effect people personality and self-confidence. As a result, people with obesity undergo bariatric surgery to reduce their weight in fast way.*

Objective: *A lot of literature published in regard of evaluation role of bariatric surgery in development of cholelithiasis. In our review we aim to assess the recent literatures in order to provide a simple yet comprehensive summary.*

Methods: *PubMed database was used for articles selection, and the following keys used in the mesh {Bariatric Surgery, Gallbladder stones, bariatric surgery complication} A total of 6 articles were enrolled according to our inclusion and exclusion criteria.*

Conclusion: *Rapid loos of weight as a result of bariatric surgery is associated with gallstone formation. Prophylaxis cholecystectomy after bariatric surgery is not indicated because only small percentage might develop a symptomatic cholecystitis, but the use of Ursodeoxycholic acid) in the first 6 months is advised.*

Corresponding author:
Alanazi,Waleed Shuwayyikh S,
Aljouf University.

QR code

Please cite this article in press Alanazi,Waleed Shuwayyikh S et al., ***Role Of Bariatric Surgery In Cholelithiasis Development: A Simple Literature Review .,*** *Indo Am. J. P. Sci, 2019; 06(01).*

INTRODUCTION:

Obesity is defined by the world health organization (WHO) as body mass index (BMI) ≥ 30 kg/m2. WHO predicted that most of adult population of the world will be either overweight or obese by 2030 [1,2]. Obesity has a significant effect on people health and escalate the risk of morbidity and mortality. It is important to mention that excess body weight is a significant risk factor for development of cardiovascular diseases, diabetes, cancers, and musculoskeletal disorders, which leads to approximately three million annual deaths worldwide [1,3].

It is a clear idea that obesity is treated by by diet modification, exercise and pharmacological treatment. However, the use of surgical intervention as a tool for rapid weight loss is currently increasing [4,5].

Surgical intervention such as bariatric surgery can be associated with increase in the risk of development of cholelithiasis which occur as a result of hardened deposits of the digestive fluid bile that can form within the gallbladder [10,11]. Gallbladder stones form when an imbalance occur in the chemical constituents of bile which lead to its precipitation. In general, gallbladder stones develop; as a result of various risk factors such as age over 40 years, female gender, and obesity [6,8,9].

In this paper, we are going to review the articles related to the incidence of cholelithiasis development after bariatric surgeries, and the related risk factors, and to assess the benefit of prophylaxis measures.

Table 1 List of included articles

Ref. No.	Articles
18	Comparison of cholecystectomy cases after Roux-en-Y gastric bypass, sleeve gastrectomy, and gastric banding. 10.1016/j.soard.2013.04.019
19	Incidence of Gallstone Formation and Cholecystectomy 10 Years After Bariatric Surgery. 2015 Jul;25(7):1171-6.
20	Management of gallbladder disease after sleeve gastrectomy in a selected Lebanese population. 2016 Aug;12(7):1300-1304.
21	The Incidence of Cholelithiasis after Sleeve Gastrectomy and its Association with Weight Loss: an Historical Cohort Study. 10.1016/j.ijsu.2016.03.060
22	A Prospective Study of the Conservative Management of Asymptomatic Preoperative and Postoperative Gallbladder Disease in Bariatric Surgery. 2017 Jan;27(1):148-153
23	How frequently and when do patients undergo cholecystectomy after bariatric surgery? 2014 Mar-Apr;10(2):313-21.

METHODS AND MATERIALS:

Sample:

PubMed was chosen as the search database for the articles selection, because it is one of the major research databases within the suite of resources that have been developed by the National Center for Biotechnology Information (NCBI). The following keys used for the Mesh ("Bariatric Surgery/adverse effects"[Mesh] OR "Bariatric Surgery/complications"[Mesh]) AND ("Gallstones/epidemiology"[Mesh] OR "Gallstones/etiology"[Mesh] OR "Gallstones/mortality"[Mesh] OR "Gallstones/physiology"[Mesh] OR "Gallstones/prevention and control"[Mesh]). A total of 21 articles were found. Further modification by using the filter “restriction to last 5 years”, which left us with 13 articles. Further screening by title and reviewing the abstracts yielded 6 articles which were enrolled. Inclusion criteria: the articles were selected based on the relevance to the project which should include one of the following topics {Bariatric Surgery, cholelithiasis, gallbladder stones, cholecystitis}. Exclusion criteria: all other articles which did not have one of these topics as their primary end, or repeated studies.

Analysis:

No software was used, The data were extracted based on specific form that contain (Title of the study, name of the author, Objective, Summary, Results, and Outcomes), these data were reviewed by the authors to assess the relation of cholelithiasis to bariatric surgery, and weigh the pros and cons of prophylaxis measurement use. Double revision of each author outcomes was applied to ensure the validity and minimize the mistakes.

RESULTS:

A total of 6 articles were enrolled in our study according to our inclusion and exclusion criteria.

DISCUSSION:

Obesity is defined by the world health organization (WHO) as body mass index (BMI) ≥ 30 kg/m2. WHO predicted that most of adult population of the world will be either overweight or obese by 2030. Obesity has a significant effect on people health and escalate the risk of morbidity and mortality. It is important to mention that excess body weight is a significant risk factor for development of cardiovascular diseases, diabetes, cancers, and musculoskeletal disorders, which leads to approximately three million annual deaths worldwide.

It is a clear idea that obesity is treated by by diet modification, exercise and pharmacological treatment. However, the use of surgical intervention as a tool for rapid weight loss is currently increasing.

Surgical intervention such as bariatric surgery can be associated with increase in the risk of development of gallbladder stones. In our review we aim to discuss the recent updates regarding cholelithiasis development and it is effect on the patient's life.

Moon et al. [18] compared between different surgical interventions that aim to reduce body weight and found that a significant loss in the body weight in a short time is associated with escalating the risk of cholelithiasis development. In addition, Manatsathit et al [21] finalized in his retrospective cohort that rapid body weight loss has a direct correlation with cholelithiasis development which may lead to cholecystitis. Aridi et al [20] mentioned that bariatric surgery is not associated with increase in the risk of cholecystectomy, which is can be attributed to the short follow up period which was 1 year. Melmer et al [19] evaluated the role of bariatric surgery in development of cholelithiasis and the frequency of cholecystectomy in 10 years follow up period. The study showed that cholelithiasis development was associated significantly with rapid body weight loss with female gender predominance.

Tsirline et al [23] evaluated the incidence of cholecystectomy after bariatric surgery in 4 years follow up period and found that it is prevalence is positively related to the rate of body weight loss. in addition, they mentioned that if excess weight loss (EWL) > 25% within the first 3 months is the strongest predictor of postoperative cholecystectomy.

Melmer et al [19] mentioned that patient went for bariatric surgery should be followed up with ultrasound examinations within 2 to 5 years for every patient, independent of bariatric procedure. Also, they advised for a pharmacological treatment in high risk patients. In addition, Pineda et al[22] mentioned that development of symptomatic cholelithiasis which require an urgent cholecystectomy is not significant after bariatric surgery as a result they did not advise for a prophylactic cholecystectomy.

Our study unfortunately enrolled a total of 6 studies which is not a high number. However, we only focused on the role of bariatric surgery in the development of cholelithiasis and tried to provide a simple yet a comprehensive review paper. In addition, we limited our search into 5 years in order to evaluate the recent literatures in regard to cholelithiasis development.

By looking to the included studies firstly, we found that the use of Ursodeoxycholic acid and its effect on the gallstone formation prevention specially if it's used in the first 6 month after bariatric surgery. So, we advise to conduct more studies about the use of it and its effect after bariatric surgeries. Second, rapid weight loss was found to be the most important factor associated with cholelithiasis development. Finally, we found that if excess weight loss (EWL) > 25% within the first 3 months is the strongest predictor of postoperative cholecystectomy.

REFERENCES:

1. Baker S, Barlow S, Cochran W, Fuchs G, Klish W, Krebs N, et al. Overweight children and adolescents: a clinical report of the North American Society for Pediatric Gastroenterology, Hepatology and Nutrition. J Pediatr Gastroenterol Nutr [Internet]. 2005 May [cited 2018 Apr 15];40(5):533–43.
2. Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults NHLBI Obesity Education Initiative National Heart, Lung, and Blood Institute in cooperation with the National Institute of Diabetes and Digestive and Kidney Diseases National Institutes of Health. [cited 2018 Apr 15];
3. Pi-Sunyer X. The medical risks of obesity. Postgrad Med [Internet]. 2009 Nov [cited 2018 Apr 15];121(6):21–33
4. Sjöström L, Lindroos A-K, Peltonen M, Torgerson J, Bouchard C, Carlsson B, et al. Lifestyle, Diabetes, and Cardiovascular Risk Factors 10 Years after Bariatric Surgery. N Engl J Med [Internet]. 2004 Dec 23 [cited 2018 Apr 15];351(26):2683–93.

5. Sjöström L. Bariatric surgery and reduction in morbidity and mortality: experiences from the SOS study. Int J Obes [Internet]. 2008 Dec 12 [cited 2018 Apr 15];32(S7):S93–7.
6. Shiffman ML, Sugerman HJ, Kellum JM, Moore EW. Changes in gallbladder bile composition following gallstone formation and weight reduction. Gastroenterology. 1992;103(1):214–21
7. Iglezias Brandao de Oliveira C, Adami Chaim E, da Silva BB. Impact of rapid weight reduction on risk of cholelithiasis after bariatric surgery. Obes Surg 2003;13:625–8.
8. Dittrick GW, Thompson JS, Campos D, Bremers D, Sudan D. Gallbladder pathology in morbid obesity. Obes Surg 2005;15:238–42.
9. Papavramidis S, Deligianidis N, Papavramidis T, Sapalidis K, Katsamakas M, Gamvros O. Laparoscopic cholecystectomy after bariatric surgery. Surg Endosc 2003;17:1061–4
10. Nagem R, Lazaro-da-Silva A. Cholecystolithiasis after gastric bypass: a clinical, biochemical, and ultrasonographic 3-year follow-up study. Obes Surg 2012;22:1594–9.
11. Bastouly M, Arasaki CH, Ferreira JB, Zanoto A, Borges FG, Del Grande JC. Early changes in postprandial gallbladder emptying in morbidly obese patients undergoing Roux-en-Y gastric bypass: correlation with the occurrence of biliary sludge and gallstones. Obes Surg 2009;9:22–8.
12. Teivelis MP, Faintuch J, Ishida R, Sakai P, Bresser A, GamaRodrigues J. Endoscopic and ultrasonographic evaluation before and after Roux-en-Y gastric bypass for morbid obesity. Arq Gastroenterol 2007;44:8–13.
13. Villegas L, Schneider B, Provost D, et al. Is routine cholecystectomy required during laparoscopic gastric bypass? Obes Surg 2004;14: 206–11.
14. Tarantino I, Warschkow R, Steffen T, Bisang P, Schultes B, Thurnheer M. Is routine cholecystectomy justified in severely obese patients undergoing a laparoscopic Roux-en-Y gastric bypass procedure? A comparative cohort study. Obes Surg 2011;21:1870–8.
15. Nougou A, Suter M. Almost routine prophylactic cholecystectomy during laparoscopic gastric bypass is safe. Obes Surg 2008;18:535–9.
16. Tucker ON, Fajnwaks P, Szomstein S, Rosenthal RJ. Is concomitant cholecystectomy necessary in obese patients undergoing laparoscopic gastric bypass surgery? Surg Endosc 2008;22:2450–4.
17. Hamad GG, Ikramuddin S, Gourash WF, Schauer PR. Elective cholecystectomy during laparoscopic Roux-en-Y gastric bypass: is it worth the wait? Obes Surg 2003;13:76–81
18. Swartz DE, Felix EL. Elective cholecystectomy after Roux-en-Y gastric bypass: why should asymptomatic gallstones be treated differently in morbidly obese patients? Surg Obes Relat Dis 2005;1: 555–60
19. Moon, Rena C., Andre F. Teixeira, Christopher Ducoin, Sheila Varnadore, and Muhammad A. Jawad. "Comparison of Cholecystectomy Cases after Roux-en-Y Gastric Bypass, Sleeve Gastrectomy, and Gastric Banding." Surgery for Obesity and Related Diseases 10, no. 1 (2014): 64-68. doi:10.1016/j.soard.2013.04.019.
20. Melmer, Andreas, Wolfgang Sturm, Bernhard Kuhnert, Julia Engl-Prosch, Claudia Ress, Alexander Tschoner, Markus Laimer, Elisabeth Laimer, Matthias Biebl, Johann Pratschke, Herbert Tilg, and Christoph Ebenbichler. "Incidence of Gallstone Formation and Cholecystectomy 10 Years After Bariatric Surgery." Obesity Surgery 25, no. 7 (2015): 1171-176. doi:10.1007/s11695-014-1529-y.
21. Aridi, Hanaa Dakour, Serge Sultanem, Houssam Abtar, Bassem Y. Safadi, Hayssam Fawal, and Ramzi S. Alami. "Management of Gallbladder Disease after Sleeve Gastrectomy in a Selected Lebanese Population." Surgery for Obesity and Related Diseases 12, no. 7 (2016): 1300-304. doi:10.1016/j.soard.2016.01.029.
22. Manatsathit, Wuttiporn, Pornchai Leelasinjaroen, Hussein Al-Hamid, Susanna Szpunar, and Abdelkader Hawasli. "The Incidence of Cholelithiasis after Sleeve Gastrectomy and Its Association with Weight Loss: A Two-centre Retrospective Cohort Study." International Journal of Surgery 30 (2016): 13-18. doi:10.1016/j.ijsu.2016.03.060.
23. Pineda, Omar, Hernán G. Maydón, Mónica Amado, Elisa M. Sepúlveda, Lizbeth Guilbert, Omar Espinosa, and Carlos Zerrweck. "A Prospective Study of the Conservative Management of Asymptomatic Preoperative and Postoperative Gallbladder Disease in Bariatric Surgery." Obesity Surgery 27, no. 1 (2016): 148-53. doi:10.1007/s11695-016-2264-3.
24. Tsirline, Victor B., Zeid M. Keilani, Sofiane El Djouzi, Ryan C. Phillips, Timothy S. Kuwada, Keith Gersin, Connie Simms, and Dimitrios Stefanidis. "How Frequently and When Do Patients Undergo Cholecystectomy after Bariatric Surgery?" Surgery for Obesity and Related Diseases 10, no. 2 (2014): 313-21. doi:10.1016/j.soard.2013.10.011.