OBES SURG (2017) 27:1543–1547
DOI 10.1007/s11695-016-2503-7

ORIGINAL CONTRIBUTIONS

# The Peri-operative Bariatric Surgery Care in the Middle East Region

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Published online: 20 December 2016


**Abstract**
*Background* Bariatric surgery is common in the Middle East region. However, regional accreditation bodies and guidelines are lacking. We present the current peri-operative practice of bariatric surgery in the Middle East region.
*Setting* Public and private practice in the Middle East region.
*Methods* A questionnaire was designed to study trends of peri-operative care in bariatric surgery. It was sent to members of the Pan Arab Society for Metabolic and Bariatric Surgery (PASMBS).
*Results* Ninety-three surgeons (88.6%) responded, 63.4% were in private practice, 68.5% have been in practice for more than 5 years, and 61.1% performed more than 125 cases per year. Laparoscopic sleeve gastrectomy (LSG) was the commonest procedure performed, then laparoscopic Roux-en-Y gastric bypass (LRYGB), one anastomosis gastric bypass/mini gastric bypass (OAGB/MGB), and laparoscopic adjustable gastric banding (LAGB). Pre-operatively as a routine, 65% referred patients for dietitian and (78.3%) for smoking cessation. In contrast as a routine, 22.6% referred patients to a psychologist, 30% screened for obstructive sleep apnea (OSA), and when they did, they did not use a questionnaire. For patients 50 years of age, 22% performed a screening colonoscopy and 33.7% referred patients to a cardiologist. Intra-operatively as a routine, 25.3% placed a drain and 42.2% placed urinary catheters. In contrast, 77.1% performed a leak test (82.7% as a methylene blue leak test). Post-operatively, 79.5% used chemoprophylaxis for venous thromboembolism and 89% required patients to take vitamins. In contrast, 25% prescribed ursodeoxycholic acid.
*Conclusion* The wide variation in the peri-operative care of bariatric surgery in the Middle East region highlights the need for regional guidelines based on international guidelines.

**Keywords** Peri-operative · Bariatric surgery practice · Middle East

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## Introduction

The Pan Arab Society for Metabolic and Bariatric Surgery (PASMBS) includes surgeons practicing in the Arab-speaking countries in the Middle East and Africa. Many countries in the Middle East and Africa do not have established national bariatric surgery societies. In addition, many are not members of the International Federation for Surgery of Obesity (IFSO). The burden of obesity, type II diabetes, and the metabolic syndrome in these countries has reached alarming levels in the last two decades [1]. In addition, the number of bariatric surgery procedures performed has increased as well [2]. In contrast, based on our monthly WebEx Tele-video meeting, most bariatric surgeries

performed in these countries are done outside the setup of a multi-disciplinary bariatric surgery program. In addition, there is great variability in the peri-operative bariatric surgery care, surgeon experience, and setup of the bariatric surgery program. This study is a questionnaire-based survey that was sent to all surgeons of the PASMBS to evaluate their usual peri-operative bariatric surgery care, experience, and the setup of their bariatric surgery programs.

## Methods

The PASMBS was founded in 2013 and it is comprised of a group of surgeons practicing in the Middle East region. PASMBS includes surgeons from the Kingdom of Saudi Arabia, the United Arab Emirates, Oman, Bahrain, Qatar, Kuwait, Egypt, Palestine, Iraq, Jordan, Syria, and Lebanon. We have a monthly WebEx Tele-video conference to discuss important topics in bariatric surgery. In addition, PASMBS surgeons are connected via social media on Facebook and Telegram. Furthermore, important clinical questions or queries are posted on the secure/closed Telegram group and daily/weekly discussions are carried out to discuss clinical cases, important publications, or future meetings. The survey was prepared by the scientific committee of the PASMBS and sent to all surgeons who are members in the PASMBS Telegram group in 2015. The survey was loaded on Survey Monkey TM and we sent a link to complete the survey on the PASMBS Telegram group. The surgeons performed the survey anonymously, and we used the statistical program of Survey Monkey TM to tally the results. The survey included questions regarding the surgeons' experience, years in practice, number of procedures per year, types of procedures performed, and whether the surgeon was in a private or public hospital setting. In addition are the questions regarding the peri-operative practice of referral to dietician, referral to psychologist, screening colonoscopy or referral to cardiology at age 50, smoking cessation, pre-operative ultrasound, pre-operative upper endoscopy, screening for obstructive sleep apnea (OSA), and the method of screening for OSA (based on a questionnaire or by referral to pulmonary) medicine specialist. Furthermore, questions regarding the intra-operative practice include the use of drains, urinary catheters, performance of leak test, and the post-operative use of upper gastro-intestinal studies to check for leak, prescription of vitamin supplements, prophylaxis against gall stones, and chemo-prophylaxis against venous thromboembolism. To increase the response rate, we reminded surgeons during our monthly WebEx Tele-video conference and we posted several reminders on the Telegram group before we concluded the survey.

## Results

The survey was sent to all the members of the PASMBS Telegram group in 2015 (105 surgeons). Ninety-three surgeons responded (88.6%), of whom 63.4% were in private practice. Sixty-eight percent of PASMBS surgeons have been in practice for more than 5 years, 61.1% performed more than 125 cases per year, and for 66.8% of surgeons, bariatric surgery constituted more than 50% of their practice. Laparoscopic sleeve gastrectomy (LSG) was the commonest procedure performed, followed by laparoscopic Roux-en-Y gastric bypass (LRYGB), one anastomosis gastric bypass/mini gastric bypass (OAGB/MGB), and laparoscopic adjustable gastric banding (LAGB). Majority of PASMBS surgeons (58.6%) followed their patients through a database or registry. However, most surgeons used a local custom-made database (75.5%) rather than a regional or international registry. Pre-operatively as a routine, 65% referred patients to see a dietitian and 78.3% referred patients who smoke for a smoking cessation specialist. In contrast, 22.6% of surgeons referred patients to see a psychologist routinely and 59.5% selectively, and 30% screened for OSA routinely. In addition, when they screened for OSA, they referred the patients to a pulmonologist (65.5%) rather than doing a questionnaire. Furthermore, when surgeons screened for OSA, 85.7% required clearance by a pulmonologist prior to surgery. For patients who are 50 years of age, 33.7% referred patients to a cardiologist (59% selectively) and 22% referred patients for a screening colonoscopy. Twenty-five percent of surgeons required patients to have a pre-operative weight loss program (75%). However, 60% of surgeons required pre-operative weight loss when patients had body mass index (BMI) >60 kg/m$^2$ or evidence of hepatomegaly. In regard to preoperative studies, 63% routinely obtained an ultrasound and 26% selectively. In contrast, 36% performed upper endoscopy routinely, selectively in 56.6%, and 48.2% obtained an upper GI study routinely. Intra-operatively, 25.3% placed drain routinely and 41% selectively in revisional bariatric surgery and high-risk patients. Similarly, 77.1% performed an intra-operative leak test routinely and 13.3% selectively. In addition, when they performed a leak test, 82.7% performed a methylene blue leak test. In contrast, 42.2% placed urinary catheters routinely. Post-operatively, 30% routinely performed an upper gastrointestinal (UGI) radiographic study and 36% selectively. In addition, 55.6% of surgeons who obtained UGI studies after surgery experienced a patient with a clinical leak despite the patient having a negative UGI study. Seventy-nine percent of PASMBS surgeons used chemoprophylaxis for venous thromboembolism. In addition, 47.5% routinely continued chemoprophylaxis after discharge and 40% selectively. Furthermore, the duration of post-discharge chemoprophylaxis was for 1 week in 33% and 2 weeks in 48.6% of surgeons. Eighty-nine percent of PASMBS surgeons required patients to take

vitamins after surgery. In contrast, 25% prescribed ursodeoxycholic acid as prophylaxis against gallbladder stones for 6 months after bariatric surgery.

## Discussion

Our study shows that most of the bariatric surgeons in the PASMBS are in private practice. In addition, most surgeons perform more than 125 bariatric surgery cases per year, have been in practice for more than 5 years, and bariatric surgery represents more than 50% of their practice. Similarly, an Australian study showed that most bariatric surgeries are done in private practice and only 10% of bariatric surgeries are done in public hospitals [3].

In contrast, a survey of all bariatric surgery clinics in Canada showed that 60% of bariatric surgeries are performed in public hospitals [4]. Bariatric surgery is one of the surgical specialties in which volume correlates with better quality [5]. Hence, the volume of bariatric surgery (>125 bariatric surgeries per year) is a metric that has been used to by the American Society of Metabolic and Bariatric Surgery (ASMBS) to accredit bariatric surgeons for years [6]. It is re-assuring that more than 60% of PASMBS surgeons perform more >125 cases per year. In addition, it is re-assuring that for 66.8% of PASMBS surgeons, bariatric surgery constitutes >50% of their practice. This implies that bariatric surgery is the predominant case mix in the practice of many PASMBS surgeons surveyed, and focusing on bariatric surgery as a specialty is another area that is used to accredit bariatric surgeons [6]. However, it is not re-assuring that most PASMBS surgeons (63.4%) are in private practice. Studies have shown that concentration of bariatric surgery in private practice may lead to poor access of the underserved population to bariatric surgery [4]. In addition, it is difficult to follow patients in long term in private practice without the setup of a multi-disciplinary team (MDT) practice because if a bariatric surgeon continues to follow up his patients without the help of an MDT, then they will not be able to see new patients, and the financial reward of post-operative follow up is obviously much lower than that of performing bariatric surgeries or evaluating new patients.

We are not aware what percentage of our PASMBS surgeons have a multi-disciplinary team in their practice as we did not ask these questions in our survey. The setup of a MDT is a setup that requires a team of dietitians, psychologists, bariatric coordinators, and bariatric physicians to help evaluate patients before and follow bariatric surgery patients in long term after surgery [7]. This MDT setup with the patient at the center of care is the best model for providing bariatric surgery care and is the recommended model by leading bariatric surgery organizations like the ASMBS, IFSO, European Association for the Study of Obesity (EASO), and European Association for the Study of Obesity Obesity Management Task Force (EASO OMTF) [8–10]. However, this MDT setup is expensive and requires a commitment from the bariatric surgeon and hospital administration to absorb some of the setup and running costs. It is possible that many private practice bariatric surgeons in the Middle East might not have the required significant infrastructure and financial investment set up such comprehensive bariatric surgery. Lack of such MDT teams may lead to difficulty in the follow-up of patients in long term. In addition, this might affect pre-operative work-up of bariatric surgery patients.

Most PASMBS surgeons routinely referred patients for dietician and patients who smoke for smoking cessation prior to embarking on bariatric surgery. In contrast, most PASMBS surgeons did not refer patients routinely for psychological assessment or screened patients for obstructive sleep apnea routinely. It is concerning to note that many PASMBS bariatric surgeons did not routinely refer patients to a psychologist or screened morbidly obese patients for a common and dangerous obesity-related medical problem like OSA. Studies have shown that OSA can be present in 45–60% of bariatric surgery patients [11, 12]. In addition, OSA correlates with higher morbidity and mortality after bariatric surgery and is considered a predictor of negative outcomes [13]. Similarly, routine referral of bariatric surgery patients to a psychologist is recommended by the ASMBS, and in a survey of 188 bariatric surgery programs, more than 81% of bariatric surgery programs in the USA referred patients routinely for psychological assessment [14, 15]. Recent studies have shown that bariatric surgery patients have a higher self-harm score after bariatric surgery compared to before bariatric surgery [16]. In addition, the risk for suicide and homicide has been shown to be higher in bariatric surgery patients after surgery [17]. All these are factors that support referring patients routinely to see a psychologist before embarking on bariatric surgery. Another area of concern is pre-operative screening cardiac disease and colon cancer in patients older than 50 years of age. Many PASMBS surgeons do not screen for colon cancer in such a high-risk population like morbidly obese patients who are 50 years of age. Hadad et al. have shown that obese patients have higher incidence of polyps, advanced polyps, and cancer when compared to non-obese patients [18].

LSG is the commonest procedure performed by PASMBS bariatric surgeons followed by RYGB and then OAGB/MGB. Similarly, Angrisani et al. and the recent ASMBS survey have shown that LSG is becoming the commonest procedure in the USA, Europe, and Asia followed by RYGB. In contrast, RYGB is the commonest procedure followed by LSG in Latin America [2, 19]. LSG, which was described in 2001 by Michel Gagner, has a short learning curve and similar outcomes to RYGB in a Swiss RCT [20, 21]. In addition, our survey shows that LAGB has lost a significant ground and this finding mimics the trend worldwide. In contrast, our study

shows that OAGB/MGB has emerged as the third commonest procedure for PASMBS bariatric surgeons despite being a mal-absorptive operation in a region in which patients have poor follow up after bariatric surgery and eat a diet high in starch.

Our study showed that there is a wide variability in the peri-operative practice of bariatric surgery in the Middle East and that many PASMBS surgeons are not necessary following evidence-based recommendations. For example, studies have shown the low utility of performing pre-operative ultrasound, pre-operative endoscopy, and pre-operative and post-operative UGI studies [22–25]. Nevertheless, many PASMBS bariatric surgeons still obtain pre-operative ultrasound, perform pre-operative endoscopy, and obtain pre- and post-operative UGI studies. Hence, as shown by Medina et al., it is no surprise that more than half of our surgeons have had a leak despite having a negative post-operative UGI study [25]. In addition, only 25% of PASMBS surgeons prescribed prophylaxis in the first 6 months after bariatric surgery to reduce the incidence of post-operative gall stones despite level I evidence showing that the use of ursodeoxycholic acid can reduce the rate of developing gall stones from more than 30% to less than 3% in the first 6 months after bariatric surgery [26, 27]. In contrast, as it is recommended after most primary bariatric surgeries, most PASMBS surgeons do not place drains or urinary catheters routinely [28]. Similarly, most PASMBS surgeons prescribed chemoprophylaxis after bariatric surgery. However, more than half of PASMBS bariatric surgeons did not continue chemoprophylaxis after discharge and a third used chemoprophylaxis for only 1 week. Recent studies have shown the aggressive use of low molecular weight heparin rather than subcutaneous heparin [29]. In addition, screening for high-risk patients and prescribing extended post-discharge chemoprophylaxis for 2 weeks have been shown to reduce the risk of venous thromboembolism after bariatric surgery [29–31].

In the future, we are planning to educate PASMBS surgeons about the importance of following international guidelines regarding the MDT setup of bariatric surgery programs, best practice in pre-, intra-, and post-operative care of bariatric surgery patients. In addition, the PASMBS is planning to put together regional guidelines based on international guidelines for bariatric and metabolic surgery to help unify the practice of bariatric surgery in our region [8–11, 31].

Our study has several limitations. First, it has the limitations of being a survey and we could not verify the responses of the surgeons, which is the nature of any survey. In addition, our PASMBS represents surgeons from many countries in the Middle East, but possibly they might not be an adequate representative sample to surgeons practicing in the Middle East region. In addition, many surgeons who practice in the Middle East region might not be members in our PASMBS. Nevertheless, the high response rate and the use of an electronic anonymous program make the results of our study more valuable.

## Conclusion

Most of the bariatric surgeons in the PASMBS are in private practice, perform >125 bariatric surgery cases per year, have been in practice for >5 years, and bariatric surgery represents >50% of their practice. The wide variation in the peri-operative care of bariatric surgery in the Pan Arab region highlights the need for regional guidelines based on international guidelines.

### Compliance with Ethical Standards

**Conflict of Interest** The authors declare that they have no conflict of interest.

**Ethical Approval** All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

This article does not contain any studies with human participants or animals performed by any of the authors.

For this type of study, formal consent is not required.

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