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ARTICLE

Prolonged postoperative antibiotic administration reduces complications after medial thigh lift

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ABSTRACT

There is widespread consensus that there is no indication for postoperative antibiotic administration after elective surgery. However, medial thigh lift (MTL) remains a procedure with a notoriously high rate of wound-healing disorders and infections. This study investigates the correlation between prolonged antibiotic administration and complications after MTL in massive weight loss patients. We performed a single-institution retrospective review of 121 patients undergoing MTL between 2009 and 2020. Data on postoperative outcome, demography, surgery and comorbidities were collected. All patients received intravenous antibiotics preoperatively. One group was continued on oral antibiotics for two weeks postoperatively. Complications and surgical site infections were observed and evaluated. There was no difference between the groups regarding age, BMI, or presence of obesity-associated risk factors. We observed complications in 76 patients (71%), with 60 (56%) minor and 16 (15%) major complications. The group without prolonged antibiotic administration had a higher number of total complications (OR 3.5; $p = 0.0037$), major complications (OR 4; $p = 0.01$), and wound infections (OR 6.8; $p = 0.0004$). Logistical regression analysis showed that this effect was independent of type of weight loss, resection volume, and age. Reduction of major infections by prolonged antibiotics was, however, dependent on BMI Δ. No side-effects associated with antibiotics were registered in this series. This study suggests that prolonged antibiotic administration may decrease complications in MTL. We thus continue to use prolonged antibiotic administration after MTL. Further research is needed to determine the optimal duration of antibiotic treatment.

Level of Evidence: Level IV: therapeutic study

Abbreviations: BCS: Body Contouring Surgery; SSI: Surgical Site Infection; MTL: Medial Thigh Lift

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Body contouring surgery; weight loss patients; complications; medial thigh lift; aesthetic surgery; surgical site infections

Introduction

Postbariatric body contouring surgery (BCS) has a central role in the rehabilitation of the previously overweight patients. Massive weight loss can lead to tissue excess, which in turn can lead to functional problems and dissatisfaction with the patient's appearance. Patients mainly report stigmatization, inability to exercise sufficiently, skin infections, odors, and difficulty in buying clothing [1–4]. BCS has a substantial benefit to the patient's life, as it has shown to improve the quality of life and helps with further weight loss [5,6].

Initially described by Lewis in 1957, medial thigh lift (MTL) was initially performed with reluctance, as patients frequently reported wound-healing disorders, labial deformities, unsightly scarring and recurrence of skin laxity. The medial thigh lift has been revolutionized by Lockwood's fascial anchoring technique, which provided more reliable results [7–9]. However, MTL remains a procedure with high postoperative complication rates, which are reported at 50% or higher. These are mainly comprised of minor wound-healing disorders, dehiscence, or seroma and hematoma formation. Major complications with surgical intervention or infections with hospital readmission for intravenous antibiotic administration remain rare [10–12].

Standardized selection of patients can minimize complications. The indicators include BMI, delta BMI (BMI before-after weight loss), the Edmonton Obesity Staging System (EOSS) score, duration of surgery, avoiding nicotine consumption, male gender, extended tissue resection and extended operating time [10,13–17].

Surgical site infections (SSI) occur in approximately 2–5% of inpatient surgeries [18]. Recommendations for antibiotic prophylaxis consist of single-shot intravenous antibiotic 30–60 min prior to surgery. Antibiotic prophylaxis is extended postoperatively only in rare cases and is even then limited to 24 h. Prolonged antibiotic administration after this timepoint is defined as antimicrobial therapy [19].

In MTL, compared to other surgical procedures, high rates of subclinical wound breakdown (perhaps 100%) can be suspected, which is mainly caused by the mechanical stress of walking. The compromised barrier enables the inoculation of skin bacteria, which are abundant in the inguinal and genital regions. This sequence of events can lead to deep tissue infection, especially if seroma or hematoma is present. Therefore, we hypothesized that the prolonged postoperative administration of antibiotics might benefit this patient population.

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Patients and methods

The study was conducted at the Freiburg University Medical Center. Patients were operated in the Department of Plastic and Hand Surgery, in the Section of Postbariatric Surgery, a member in the Interdisciplinary Center Obesity and Metabolic surgery. Patients undergoing MTL in the period from 2009 to 2020 were included. The exclusion criteria were weight loss below 20 kg. In addition, patients who had received a medial thigh lift for other medical indications not related to weight loss were excluded. These included patients with lymphedema, wound closure after flap harvest (e.g. TUG-flap) or tumor resection. Patients with inadequate or lacking documentation, as well as patients without follow-up were also excluded. The operations were performed by a board-certified plastic surgery specialist or a resident under direct supervision.

Our surgical techniques include the classic vertical thigh lift, the horizontal thigh lift or a combination of these two techniques (T-incision) for extensive tissue excess. Prior to tissue resection, we perform liposuction. We use nonabsorbable suture material for wound closure and place Easy Flow drainages which are removed on the second postoperative day. Postoperatively, the legs are elastically bandaged. The surgical technique is shown in Figure 1. Patients receive weight adapted low-molecular-weight heparin for thrombosis prophylaxis and are mobilized immediately postoperatively. After discharge, patients wear compression garments for 6 weeks postoperatively.

All patients receive a single dose of intravenous antibiotic (2 g cefazolin/1.5 g cefuroxime or 600 mg clindamycin in case of allergies against cephalosporines) 30–60 min preoperatively. We divided patients into the group without and with prolonged postoperative antibiotic administration. This subdivision began arbitrarily in 2016 when we started recommending prolonged oral antibiotic administration based on anecdotal evidence. In the prolonged antibiotic group, antibiotic coverage was continued orally (clindamycin 600 mg two times daily) for two weeks postoperatively.

Patient data were collected from patient records. These include: age, sex, weight and BMI, maximum weight, BMI before weight loss, nicotine consumption, the type of weight loss (bariatric surgery or independent weight loss), type of surgery, volume of liposuction, resection weight, duration of surgery and underlying medical conditions and known risk factors for complications in BCS.

Complications were collected from the electronic patient records, as well as from the outpatient records. The complications were divided into major and minor. Minor complications are those that did not require surgical treatment or hospitalization, including wound-healing disorders and minor dehiscence, superficial infections that could be treated with oral antibiotic therapy, as well as seromas and hematomas that did not require surgery (puncture and percutaneous drainage were considered non-surgical). Complications that required hospitalization or surgical intervention were considered major complications. These include abscesses and hematomas requiring revisionary surgery, infections that required intravenous antibiotic therapy and wound-healing disorders or dehiscence that required secondary wound closure.

We performed *t*-test for continuous variables and Fishers exact test for categorical variables. Logistic regression analysis was

Figure 1. Demonstration of the operative technique for the vertical thigh lift. A vertical incision line representing the final scar position is marked on a standing patient, taking care that it is as concealed as possible. The patients are positioned in a lithotomy position (A). Following sterile draping, a liposuction cannula is held on the marked line and the extent of tissue resection tailor tucked around it using skin staples (B). The goal is to achieve the maximal amount of tissue removal, without excessive tension. Care is taken to achieve symmetry, taking possible preoperative asymmetries into account (C). After infiltration with tumescent solution, aggressive (within area to be resected) and moderate (outside this area) liposuction is performed (not shown), accompanied by resection of the marked area in a distal-to-proximal direction (D). The resection is strictly episcarpal and the deep fascia is never exposed. After hemostasis, easy flow drains are inserted and single-knot sutures tied (E). Non-absorbable running suture competes the closure of the wound (F), and elastic bandaging of the legs completes the procedure (G). Patients are encouraged to ambulate as much as possible. Easy flow drains are removed on the second day, compressive garments fitted, and the patients discharged.

performed to analyze the correlation between antibiotic therapy and complications, and to investigate possible confounding effects of other variables on this correlation. The analyses were performed with Stat 14 (StataCorp LP, 4905 Lakeway Drive, Colloge Station, TX 845 USA) and Graphpad Quick Calcs (https://www.graphpad.com/quickcalcs). Results with $p < 0.05$ were considered statistically significant. The Freiburg University ethics committee approved the clinical investigation (297/20). The necessity for individual informed consent of all patients was waived. The STROBE guidelines for cohort studies and patient series were followed in preparing this manuscript.

Results

A total of 121 patients were enrolled in the study, 109 were female (90%) and 12 were male (10%). The mean age was 44.9 years at the time of surgery, with a range from 22 to 69 years. The mean BMI before BCS was 30.1 kg/m^2 (29.7 kg/m^2 in the no antibiotic and 30.4 kg/m^2 in the antibiotic group, $p = 0.53$). Of the 121 patients, 92 patients (76%) underwent bariatric surgery, the remaining patients achieved weight loss through diet and exercise. In the no-antibiotic group, these values were 30 (64%) and 17 (36%), and in the antibiotic group 62 (85%) and 11 (15%), respectively. Eighty-six patients (71%) received vertical thigh lift, 18 patients (15%) horizontal thigh lift and 17 patients (14%) the combination in the sense of a T-incision medial thigh lift. In the no-antibiotic group, these values were 6 (13%), 35 (74%) and 6 (13%), respectively, and in the antibiotic group, 11 (15%), 50 (68%) and 12 (16%), respectively. The mean resection weight was 855 grams with a range from a minimum of 79 g to a maximum of 3602 g. Both groups did not differ in gender ratio, age, patients' weight or BMI before BCS ($p > 0.05$). However, the group with prolonged antibiotic administration had a lower maximum weight ($p = 0.033$), a lower weight loss ($p = 0.024$) and were more likely to have had previous bariatric surgery ($p = 0.007$), and the groups differed regarding operation time and weight of the resected tissue. The most frequent underlying diseases were high blood pressure in 42 patients and arthritic complaints in 27 patients. Nicotine abuse was reported in 25 of the patients (21%). For details on demographic data and risk factors, see Table 1.

Table 1. Demographic data and risk factors.

Demographic data	No prolonged antibiotic administration ($n = 48$)	Prolonged antibiotic administration ($n = 73$)	p-Value
Gender	$m = 6$ (12.5%) $w = 42$ (87.5%)	$m = 6$ (8.2%) $w = 67$ (91.8)	0.42
Age (years)	42.7 (22-65)	46.3 (26-69)	0.07
Weight max (kg)	152.3	140.1	0.03
Weight before BCS (kg)	85.8	83.8	0.53
Weight loss (kg)	66.5	56.4	0.02
BMI max	52.7	50.8	0.25
BMI before BCS	29.7	30.4	0.46
BMI Δ	23.0	20.4	0.04
Bariatric surgery	30 (62.5%)	62 (84.9%)	0.01
Risk factors			
Type 2 diabetes mellitus	6 (12.5%)	8 (11.0%)	0.77
Hypertension	16 (33.3%)	26 (35.6%)	0.86
Hyperlipidemia	2 (4.2.%)	4 (5.8%)	0.77
Sleep apnea	3 (6.25%)	8 (11.0%)	0.40
Gout	1 (2.1.%)	1 (1.4%)	0.75
Arthritis/ Joint replacement	8 (16.7%)	19 (26.0%)	0.25
Fatty liver	2 (4.2%)	1 (1.4%)	0.33
Depression	8 (16.7%)	8 (11.0%)	0.34
Anticoagulation or APT	0 (0%)	3 (4.1%)	0.16
End-organ damage (MI, stroke/TIA, DVT, PE, COPD)	2 (4.2%)	2 (2.7%)	0.66
Lymphedema, Lipedema, CVI	4 (8.4%)	8 (11%)	0.67
Nicotine abuse	10 (20.9%)	15 (20.5%)	0.92

APT: Antiplatelet therapy; BMI: Body mass index (kg/m^2); BCS: Body contouring surgery; COPD: chronic obstructive pulmonary disease; CVI: chronic venous insufficiency; DVT:deep vein thrombosis; MI: myocardial infarction; PE: pulmonary embolism; TIA: transient ischemic attack.

Overall, 76 patients (63%) suffered from complications in which minor complications were predominant (60/76 patients, 79%). Major complications occurred in 16 of those 76 patients (21.1%). The remaining 45 patients (37%) developed no complications. Minor complications include wound-healing disorders in 54 patients and seroma formation in 26 patients. The most frequent major complication was wound infection in 14 patients (11.6%), which required surgical revision or hospitalization for intravenous antibiotic administration. Outpatient wound infections occurred in seven out of 48 patients (14.6%) in the group without prolonged antibiotic administration only. A detailed list of complications is displayed in Table 2.

We compared the patients with only preoperative antibiotic prophylaxis and those with prolonged antibiotic administration. Patients without prolonged antibiotic administration showed a significantly increased risk of complications. While 38 out of 48 patients (79.2%) without prolonged antibiotic administration developed complications, only 38 out of 73 patients (52.1%) with postoperative antibiotic administration presented with complications ($p = 0.0037$).

Major complications were significantly reduced by prolonged antibiotic administration ($p = 0.014$). Eleven of the 16 patients (68.75%) with major complications did not receive postoperative antibiotics. Only five of the 73 patients (6.8%) with further antibiotic administration developed major complications, while 11 of the 48 untreated patients (22.9%) had major complications.

Of the total of 121 patients, 60 patients (49.6%) developed minor complications. Of those 60 patients, 27 (45%) did not

Table 2. Complications distribution.

Complication (N, %)	Total ($n = 121$)	No prolonged antibiotic administration ($n = 48$)	Prolonged antibiotic administration ($n = 73$)
None	45 (37.2%)	10 (20.8%)	35 (47.9%)
Minor	60 (49.6%)	27 (56.3%)	33 (45.2%)
Wound-healing disorder	54 (44.6%)	26 (54.2%)	28 (38.4%)
Surgical site infection (outpatient)	7 (5.8%)	7 (14.6%)	0
Seroma	26 (21.5%)	15 (31.3%)	11 (15.1%)
Hematoma	19 (15.7%)	6 (12.5%)	13 (17.8%)
Major	16 (13.2%)	11 (22.9%)	5 (6.9%)
Hematoma requiring revision surgery	4 (3.3%)	2 (4.2%)	2 (2.7%)
Surgical site infection and readmission	14 (11.6%)	9 (18.8%)	5 (6.8%)
Other	3 (2.5%)	2 (4.2%)	1 (1.4%)

Figure 2. Results after horizontal (A and B), vertical (C and D) and T-incision inner thigh lifts (E and F).

receive prolonged antibiotic therapy. Thus, 27 of 48 patients (56.3%) without prolonged antibiotic therapy developed minor complications, while 33 of 73 patients (45.2%) with prolonged antibiotic therapy developed minor complications (Table 2).

Prolonged antibiotic administration significantly reduced the incidence of postoperative wound infections ($p < 0.001$). Overall, 21 of 121 patients (17.6%) developed a surgical site infection. Of those, 16 patients (76.2%) did not receive prolonged antibiotic administration. That means, one-third (16/48) of the patients that did not receive prolonged antibiotic administration developed a surgical site infection. In comparison, only five patients of the 73 treated with prolonged antibiotics (6.8%) developed a postoperative wound infection (Figure 3). The distribution of complications over the years is shown in Figure 4. Figure 2 demonstrates representative results after horizontal, vertical, and T-type incision thigh lifts, and Figure 5 shows the clinical appearance of normal primary healing (**A**), a minor (**B**), and a major (**C**) complication.

54 patients (44.6%) developed a postoperative wound-healing disorder, 26 of 48 patients (54.2%) without and 28 of 73 patients (38.6%) with prolonged antibiotic administration, but these results were not statistically significant ($p > 0.05$; Table 3).

Logistic regression showed significant correlation with prolonged antibiotic administration on occurrence of total complications (OR −1.82, $p < 0.01$), major complications (OR −1.46, $p < 0.05$) and minor infections (perfect correlation). These correlations were independent of BMI, BMI Δ, whether patients have had bariatric surgery, age, or volume of resected tissue. One of the factors was a significant cofounder of the correlation between major infection and antibiotic administration (Table 4). Sequential elimination of variables from the logistic regression model revealed that BMI Δ was the confounding variable. After elimination, prolonged antibiotic administration showed a significant correlation to major infections (OR −1.39, $p < 0.05$; Table 5).

Discussion

MTL are associated with a high occurrence of postoperative complications. The complication rate in this study is comparable with internationally reported case series. Various risk factors for complications and surgical site infections are well known, yet the rate of

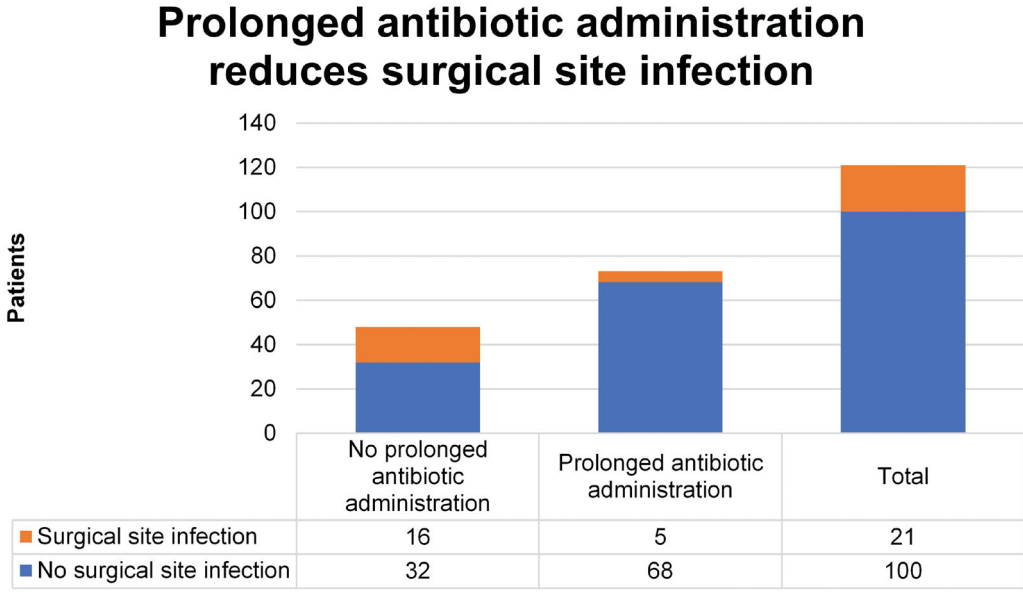

Figure 3. Prolonged antibiotic administration showing less rates of surgical site infections compared to patient without prolonged antibiotic administration.

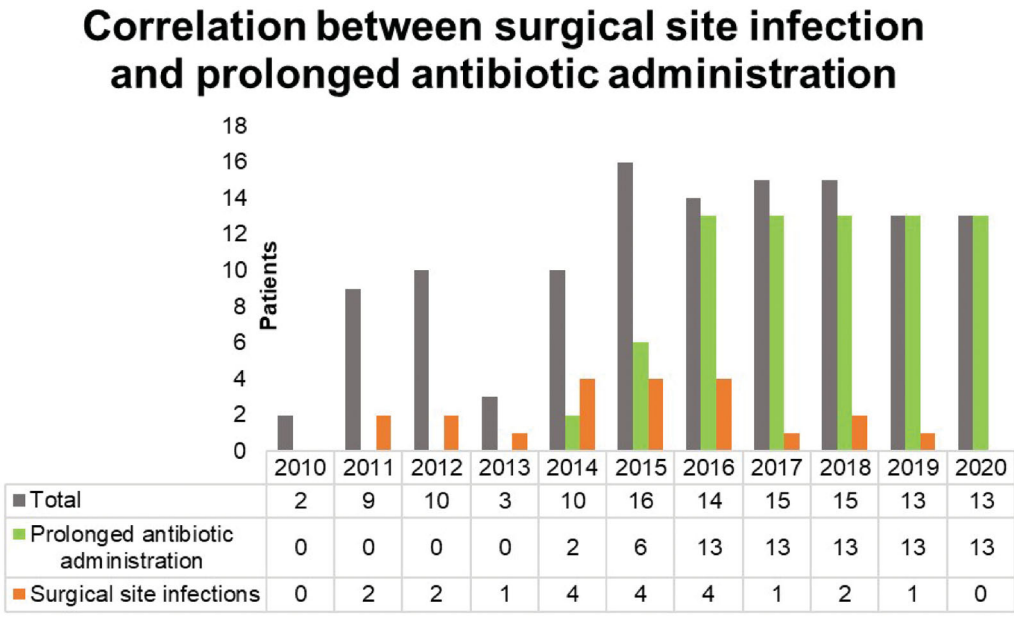

Figure 4. Correlation between infection rates and prolonged antibiotic administration. Increasing rates of prolonged antibiotic administrations results in decreasing rates of surgical site infections.

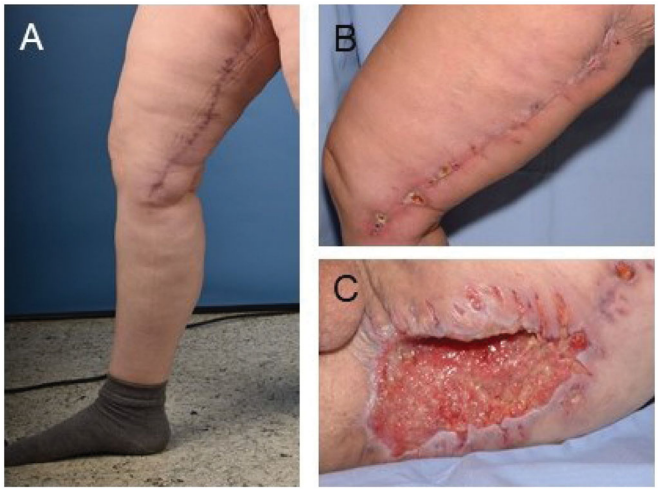

Figure 5. Panel **A** shows a patient 4 months after medial thigh lift with uneventful primary wound healing. A minor complication in another patient 4 months after medial thigh lift is shown in **B**. The minor wound-healing disorder could be treated with local wound therapy on an outpatient basis until healing by secondary intention. Panel **C** shows a major complication of a patient 1 month after medial thigh lift. The massive wound dehiscence required revision surgery with secondary suturing.

Table 3. Prolonged antibiotic administration reduces complications.

Prolonged antibiotic administration	No	Yes	Total	*p*-value	OR	RR	RRR
Complication							
No	10	38	48				
Yes	35	38	73	0.004	3.5	1.52	34.2%
Total	45	76	121				
Major complication							
No	37	11	48				
Yes	68	5	73	0.014	4.04	3.36	70.5%
Total	105	16	121				
Minor complication							
No	21	27	48				
Yes	40	33	73	0.268	1.56	1.24	19.7%
Total	61	60	121				
Surgical site infection							
No	32	16	48				
Yes	68	5	73	0.0004	6.8	4.87	79.4%
Total	100	21	121				
Wound healing disorder							
No	22	26	48				
Yes	45	28	73	0.096	1.9	1.41	27.7%
Total	67	54	121				

OR: Odds Ratio; RR: Relative risk; RRR: Relative risk reduction.

those complications in MTL remains higher compared to other surgical procedures in general and other body contouring surgery in particular [14,16,17]. Studies regarding complications after medial thigh lifts are rare and usually comprise low case numbers. The most common complication in the majority of studies concerning BCS and MTL in particular are wound healing disorders and wound dehiscence followed by seroma/hematoma formation and subsequent surgical site infections [10–12].

The rate of (superficial) SSI may be even higher than observed in this and other studies as it is hard to retrospectively distinguish between wound healing disorders with colonization of pathogens and true SSI. Therefore, we investigated the effect on overall complications and SSI separately.

The combination of high rates of seroma/hematoma formation (or a combination of both) with a discontinuity of the skin can lead to a deep tissue infection. Such secondary infections are caused by skin pathogens that are present at or near the surgical site. In case of medial thigh lifts this may be particularly important because staphylococcus aureus is a skin human skin colonizer and a pathogen which is found predominantly in the groin area [20].

A common recommendation for surgeries, such as medial thigh lifts, is first- or second-generation cephalosporine 30–60 min preoperative (or Clindamycin in case of a known intolerance against cephalosporines). Both classes of antibiotics have sufficient effect on pathogens of the skin flora and especially staphylococcus aureus [18,21].

Studies suggest that SSI rates in BCS are higher than in other soft tissue procedures and can occur in up to 20% of the patients. MTL are particularly vulnerable for infections and preoperative antibiotic prophylaxis already reduces the risk of SSI [22–24]. In a

Table 4. Logistic regression showing significant correlation with prolonged antibiotic administration on occurrence of total complications, major complications and minor infections (perfect correlation).

Variables	Complications	Minor Complications	Major Complications	Wound healing disorder	Minor infection	Major infection
Prolonged antibiotic administration	−1.82** (0.59)	−0.55 (0.46)	−1.46* (0.66)	−0.66 (0.47)	1	−1.24 (0.67)
BMI	0.15* (0.06)	0.09 (0.05)	0.03 (0.07)	0.11* (0.05)	−0.01 (0.11)	0.07 (0.08)
BMI Δ	0.16** (0.05)	0.07* (0.03)	0.06 (0.04)	0.06 (0.03)	−0.002 (0.07)	0.05 (0.05)
Bariatric surgery	−0.21 (0.61)	0.07 (0.5)	−0.38 (0.73)	0.002 (0.53)	1.71 (1.25)	−0.18 (0.76)
Age	0.02 (0.02)	0.01 (0.02)	0.01 (0.03)	−0.004 (0.02)	−0.003 (0.05)	−0.01 (0.03)
Volume resected tissue	−0.0009 (0.00)	−0.0005 (0.00)	−0.0002 (0.00)	−0.0002 (0.0)	−0.00002 (0.0)	−0.0004 (0.00)

These correlations were independent of BMI, BMI Δ, whether patients have had bariatric surgery, age, or volume of resected tissue. One of the factors was a significant cofounder of the correlation between major infection and antibiotic administration.
Standard errors in parentheses.
$^{**}p < 0.01$, $^{*}p < 0.05$.

Table 5. Logistic regression showing that BMI Δ is a significant cofounder of the interaction between antibiotic administration and the occurrence of major infection.

Variables	Major infection
Prolonged antibiotic administration	−1.39* (0.67)
BMI	0.05 (0.07)
Bariatric surgery	0.10 (0.7)
Age	−0.01 (0.03)
Volume resected tissue	−0.0002 (0.00)

When BMI Δ was removed from the analysis, the correlation became significant.
Standard errors in parentheses.
$^{*}p < 0.05$.

statement from the American Association of Plastic Surgeons a prolonged antibiotic administration extending 24 h is not recommended for plastic surgery procedures. However, these recommendations are based on studies referring to various kind of operations. Studies focusing on medial thigh lifts are not available in the literature due to the paucity of investigations [25]. Studies investigating the benefit of prolonged antibiotic administration in plastic surgery in general are rare. Sevin et al. found that in abdominoplasty surgery, antibiotic prophylaxis reduced SSI, but prolonged administration of antibiotics had no effect in reductions infection rates. Other studies that found no benefit for long term antibiotic prophylaxis did not distinguish MTL from other clean or clean contaminated surgery or did even not include MTL in their analyses [26]. However, the infection rate in this study was only 2% and the procedure is not comparable to thigh lifts [27]. Also in maxillofacial surgery a large study of 901 patients, prolonged antibiotic prophylaxis had no influence on surgical site infections [28]. Other studies investigating the benefit of antibiotic prophylaxis in plastic surgery do not look into BCS or lower limb surgery and therefore report significantly lower infection rates [29]. In other types of surgery, such as cardiothoracic surgery, where antibiotic prophylaxis is usually extended to 48 h, a prolonged administration showed no benefit in reducing infections and suggests an increased risk of antibiotic resistance [30]. To our best knowledge, there is no study that deals with postoperative infections in medial thigh lifts and prolonged antibiotic administration.

Surgical site infection is a serious complication, which can lead to life-threatening deep tissue infections. In one dramatic case, necrotizing fasciitis appeared postoperatively, which had to be treated with multiple surgical revisions and a long stay in intensive care. This patient had deep tissue wound infection caused by Gram-negative *E. coli* bacteria, which was not addressed by the prescribed oral antibiotic.

The administration of antibiotics over the time period of perioperative prophylaxes is usually not recommended, because it is assumed that, after wound closure in OR, the wound remains closed and there is no postoperative contamination of the wound by neighboring skin microorganisms [19]. MTL may be an exception due to the special circumstances such as high rates of wound-healing disorders with superficial skin breakdown and skin discontinuity which is significantly more frequently observed in MTL than other surgical procedures.

The identified risk factors for surgical site infections (SSI) are essentially similar to those of general complications. The risk of developing SSI is significantly higher in extremity procedures compared to breast or face surgery [22].

With a total of 121 patients in two groups, which do not differ significantly in demographic aspects, we observe a crucial reduction of complications and SSI in patients who took oral antibiotics for a total of two weeks after MTL. Even the rate of wound-healing disorders decreased in the group of prolonged antibiotic administration, a circumstance that we attribute to the difficult differentiation between true SSI and (larger) wound-healing disorders which are contaminated by human pathogens. Avoiding SSI and wound-healing disorders is essential as these complications can lead to unsatisfying scars and influence patient's satisfaction.

One major weakness of this study lies in its retrospective nature. Retrospective chart analysis implies incompleteness of patient's data. Secondly, the division into the two groups was arbitrary at a certain point of time. Furthermore, the two patient groups were operated by various surgeons. Even though there is a continuity of the surgical technique in our department, this fact presents a major confounder in our study. The groups were, however, comparable with regard to risk factors. The only differences between the groups was a higher proportion of bariatric surgery, a higher weight loss in the group without prolonged antibiotic administration and, accordingly, larger resection volumes and longer duration of surgery (Table 1). This reflects the fact that, with time, bariatric surgery is indicated in more patients, and in lower BMI patients, leading to lower BMI values and lower tissue resection values. This difference in the groups reflects in our analysis, as we found that BMI Δ was a cofounder in the correlation between antibiotic administration and major infections (Tables 4 and 5).

There were no side-effects of clindamycin noted in this study, such as allergic reaction or diarrhea, and all patients completed the two-week course of antibiotics. While fully aware of the undesirable effects, such as acquired antibiotic resistance, we believe that patients undergoing MTL surgery may benefit from prolonged antibiotic administration. In these patients, there is a high (possibly 100%) rate of subclinical wound breakdown in the early postoperative period, which can lead to deep tissue infections. Clindamycin is a reasonable choice as it has high tissue and fluid concentrations after oral intake, excellent tissue penetration and is effective against Gram-positive aerobe bacteria, such as staphylococcus and various streptococcus strains, as well as

against anaerobic bacteria [31]. The optimal time of antibiotic administration needs to be further evaluated.

This study suggests a simple and inexpensive (approximately 30€/35$ for two weeks supply of clindamycin) approach for reducing complications in MTL. Nonetheless, this is an adjunctive measure. The cornerstone of avoiding complications remains meticulous surgical technique with protection of lymphatics and thorough hemostasis.

Conclusion

The presented data suggest that prolonged administration of oral antibiotics in patients after MTL might reduce complications and especially SSI. Questions to the optimal duration of the antibiotic administration and dosage cannot be answered by this study. A prospective randomized trial of a single-surgeon practice would be required to address these issues, and especially to address the surgeon-related cofounder. Nonetheless, this study suggests that MTL patients might benefit from prolonged antibiotic administration.

Disclosure statement

No potential conflict of interest was reported by the authors.

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