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Post Bariatric Buttock Contouring

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Abstract: The aim of this work is to review the literature aiming at highlighting the thoughtful drawbacks of bariatric surgeries on the buttock region. Together with understanding the best method of contouring this region back to its youthful shape as stated in previous literature. Criteria of searching used a search string to literature dating 1968 till present. Search string used on PubMed to find relevant literature. Search string involved searching for keywords; buttock contouring, post bariatric contouring, buttock lift, post massive weight loss. The repeated literature had been omitted. Exclusion criteria was any literature before 1968; as a mere factor of abundance of literature after then. Literature included was dedicated for post bariatric ptosis correction. After removal of duplicates 74 papers were included in the literature review for 6 months. literature was reviewed in pursuit of the most appropriate technique for post massive weight loss buttock contouring. The prevalence of weight loss surgeries, which has recently occurred as a treatment for the prevalence of obesity, behind the need for treatment of sagging skin around the body, including the buttocks, has been clarified many ways to resolve, including surgical and non-surgical, there is no way like me to treat that problem, but it differs from Individual to another, heavily dependent on the surgeon.

Keywords: Buttock contouring, post bariatric contouring, buttock lift, post massive weight loss.

تجميل الأرداف ما بعد جراحات فقدان الوزن

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الملخص: هدف هذا البحث إلى مراجعة الأدبيات التي تهدف إلى تسليط الضوء على العيوب العميقة لجراحات علاج البدانة في منطقة الأرداف. جنبا إلى جنب مع فهم أفضل طريقة لتجميل هذه المنطقة إلى شكلها الشبابي كما ورد في الأدبيات السابقة. استخدمت معايير البحث سلسلة بحث للأدب يرجع تاريخها إلى عام 1968 حتى الآن. سلسلة البحث المستخدمة في PubMed للعثور على الأدبيات ذات الصلة. سلسلة البحث المعنية بالبحث عن الكلمات الرئيسية؛ الأرداف الكنتوري، بعد السمنة الكنتوري، شد الأرداف، الأدب المتكرر قد تم حذفه. كانت معايير الاستبعاد أي: أدب قبل عام 1968. بعد إزالة التكرارات أدرجت 74 ورقة في مراجعة الأدب لمدة 6 أشهر. تمت مراجعة الأدبيات في السعي إلى أنسب الأساليب لتقويم الوزن الهائل للأرداف. انتشار جراحات فقدان الوزن، والذي حدث مؤخرا كعلاج لانتشار السمنة المفرطة، خلف احتياجا لعلاج الترهلات التي تحدث في الجلد بأنحاء الجسم، ومنها الأرداف، تم توضيح العديد من الطرق للحل، منها جراحي وغير جراحي، ليس هناك طريقه مثلي لعلاج تلك المشكلة، ولكنها تختلف من فرد لآخر، وتعتمد بشكل كبير علي الجراح.

الكلمات المفتاحية: الأرداف الكنتوري، بعد علاج السمنة، شد الأرداف، بعد الفقدان الهائل للوزن.

Introduction

The past decade had witnessed a dramatic increase in number of bariatric surgeries performed. This is due to the proven health benefits of bariatric surgery. This has its impact on various sites of the body, including the buttocks. To evaluate the buttock area, it is divided into four quadrants by drawing an imaginary line down to the center of the buttock and horizontal lines in mid buttock. The triangle between the two posterior superior iliac spines with coccyx gives a more aesthetic figure to the area. The lateral area of the buttock aesthetically has no depression. In infra-gluteal crease the longer the line the more deflated the buttock is. The lateral view aesthetics is described as a last S shape. Mendietta starts the classification on the frame to define the skin and fat distribution of buttock into square buttock, rounded buttock and "A" shaped frames having more fat at the lateral thighs. Non-surgical techniques of buttock augmentation include passed undergarments and corsages as well as regular physical exercise and massaging. In addition, injectable materials for buttock contouring aiming to augment the volume fillers and fat transfer. Surgical techniques for gluteal augmentation include implant placement, Fat transfer, and Adipo-cutaneous flaps involves using lipo-cutaneous flap to be placed with in the gluteal area alone or as a part of belt lipectomy procedure. This technique was described by Lockwood which showed a great deal of post-operative patient satisfaction. Bariatric (obesity) surgery refers to the variety of surgical procedures employed for achieving weight loss. It involves modification of the gastrointestinal tract to either reduce volume and/or absorptive capacity. [1]

According to the National Institute of Health (NIH) to be eligible for bariatric surgery a candidate must have a BMI 40 or 35 in the presence of severe co-morbidity [2] This option should be offered after failed long term professional weight reduction programs. [3]

Two primary strategies of surgically induced weight loss have arisen over the past 50 years: gastric restriction (e.g. Gastric band) and intestinal mal absorption (e.g. biliopancreatic diversion (BPD), with or without duodenal switch), Some procedures combine elements of restriction and mal absorption (e.g. **Roux-en-Y gastric bypass)** [2, 49, 50. 59]

Methodology

Literature select:

Criteria of searching used a search string to literature dating 1968 till present. Search string used on PubMed to find relevant literature. Search string involved searching for keywords; buttock contouring, post bariatric contouring, buttock lift, post massive weight loss. The repeated literature had been omitted. Exclusion criteria was any literature before 1968; as a mere factor of abundance of literature after then. Literature included was dedicated for post bariatric ptosis correction. After removal of duplicates 74 papers were included in the literature review.

Timeline: The literature was reviewed target timeline is 6 months. Writing up was planned to consume other months after the comparison of the data collected.

Criteria of comparison: literature was reviewed in pursuit of the most appropriate technique for post massive weight loss buttock contouring with regards to the degree of ptosis, amount of skin available for excision, aesthetic appearance post-operative and the frequency of complications. other minor criteria were looked into such as ease of technique and the need to use prosthetics such as implants.

Rationale: bariatric surgeries had a major prevalence over the past period which had a great success in the view of reduction of weight. One of the implications of the rapid weight loss it causes was the massive redundancy it leaves the patients with. Our literature review was dedicated to look into one of the most common deformities patients suffer, buttock ptosis correction, and buttock contouring.

Result and discussion

Applied anatomy and aesthetics of the buttocks

The iliac crest forms the superior border of the buttocks, which also serves as a guide for the incision finally placed with gluteal enhancement procedures using autologous tissue grafting and in addition to the incision of circumferential belt lipectomy (4). To evaluate the buttock, it is helpful to divide it into quadrants by drawing an imaginary line down the centre of the buttock, the ideal buttock has equal volumes on either side of this line. Figure 1.

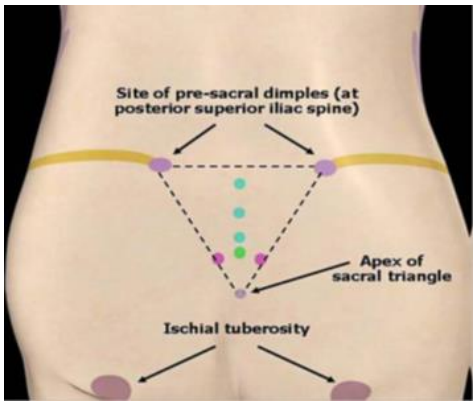

Figure (1) superficial anatomical landmarks: iliac crest (yellow line), posterior superior iliac spine (PSIS), sacrum, coccyx, and ischial tuberosity.[4]

To further assess volume distribution, a horizontal mid buttock line is added to divide the buttocks into four quadrants [5]. The upper inner gluteal/sacral unction has two distinct depressions. These depressions are produced by the multifidus muscles, lumbosacral aponeurosis and insertion of the gluteus maximus muscles. They serve as the superior corners of the triangle impregnated between the two posterior superior iliac spines with the coccyx being the inferior border as shown in figure 2 [4]. As the triangle or the "V Zone" is more apparent this gives the buttock area more aesthetic shape [5]. This is in

addition to the semi-circular shape of the gluteus muscles which impregnates the V zone even more. In case of massive weight loss various techniques are deployed to augment this area such as triangle plateau flaps and inverted dart modification. Lateral mid-buttock/hip contour, this area is formed by the thigh and trochanteric muscles insertion namely gluteus medius, vastus lateralis and quadriceps femoris. [4] In an aesthetic buttock unit this area is characterised by having no depression. [5] This is advocated by some cultural preferences of the gluteal appealing shape such as Hispanics and African American descendent women. [4] Lower inner gluteal fold/leg junction, which is made up of an upper part where both buttocks coalesce and a lower part where the two buttocks begin to separate from the midline. In an ideal aesthetic buttock this happens at the bottom two thirds to the bottom three quarters of the muscle. [5] It is at this point the infra-gluteal crease begins to emerge at an acute angle of the inter gluteal crease. The infra gluteal crease is formed by thick fascial insertions from the femur and the pelvis through the intermuscular fascia to the skin which is fixed well to define the infra gluteal sulcus. The length and definition of this line is directly proportional to the natural beauty of the buttock area.

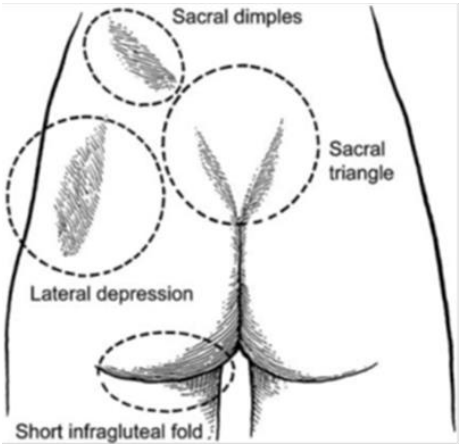

Figure (2) The sacral dimples, sacral triangle, lateral depression, and a short infragluteal crease are important gluteal aesthetic landmarks [4].

The longer the line is, the more the buttock area is thought of as to be more ptotic and deflated. And vice versa [4]. In addition, the fuller the lower inner the gluteal fold the more obliteration to the diamond shaped area which constitutes an aesthetic aspect being smudged as shown in area 6 In figure 3.

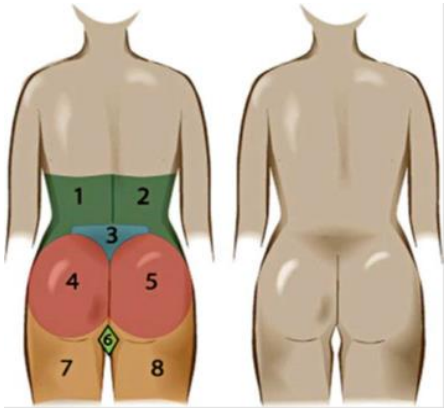

Figure (3) The followings are the eight gluteal aesthetic units: Bilaterally symmetrical "flank" units (1 & 2), sacral triangle unit (3), bilaterally symmetrical buttock units (4 & 5), one infra gluteal "diamond" unit (6), and bilaterally symmetrical thigh units (7 & 8). [4]

The preceding mentioned was supported by Cuenca Guerra and colleagues in their analysis over 2400 patients' images of the gluteal area. They came up with four main aspects to what is so called an "aesthetic buttocks" being two mild lateral depressions that correspond to the femoral greater trochanter, a short infra gluteal fold lying in the horizontal crease underneath the ischial tuberosity which does not extend beyond the medial two thirds of the posterior thigh, two supra gluteal fossettes (or dimples) on each side of the medial sacral crease which correspond to the posterior superior iliac spines and a V shaped crease which arises from the proximal end of the gluteal crease and extends towards the supra-gluteal fossettes. Lateral view aesthetics can be described as a "lazy S shape" on lateral view. Most of the bulge being situated at the central area midway between the upper and lower gluteal zones. Which is thought of to be at the level of the pubic bone. [6] Subcutaneous fat distribution is influenced by many aspects such as erect posture and the walking mechanism (bipedal locomotion). The projection of the buttock area is influenced by many aspects such as gluteus maximus and the lumbar lordosis of the spine not to mention the fascia. Subcutaneous fat distribution and abundance differs according to age, gender and body mass index of the given person. The reduction in weight post massive weight loss greatly implicates the fat content of the buttock area as it does to the other fat containing areas at the rest of the body [4]. Mendieta starts the classification of the frame which defines the skin and fat distribution of the topographical landmarks of the buttocks. He divided it to three points where point A is the most protruding point in the upper lateral hip, the point B is the point representing the most protruding point of the thigh and the point C representing the depression of the lateral mid buttock. Based upon the preceded classification, classifications of areas with excess tissue at each of the respective points are described. The square buttocks, most commonly seen, are known with the increase in tissue at the area represented with point A and B. The round shape is similar, but is characterized as having excess tissue deposition at point C. A- shaped frames are characterized as having more fat in the lateral upper thighs, which is point B which is contrasted by the V shaped figure having excess fat at the point A [6].

Techniques of Buttock Contouring

Various modalities are available for gluteal reshaping post massive weight loss. Chiefly there are non- surgical modalities to treat both flatness and ptosis post bariatric surgeries. The aim is to add volume to the gluteal area to achieve an aesthetic outcome. The modality will differ with regards to degree of ptosis in the area and how flat is it. Of the non-surgical techniques; physical exercise, padded garments and injectable materials can be postulated. On the other hand, the surgical modalities of gluteal

augmentation comprise fat injection, implant-based augmentation and lastly adipocutaneous flap alone of as a part of belt lipectomy procedure.

Non-surgical techniques: Among the non-surgical techniques for gluteal augmentation are the **padded undergarments** which contain padding which resembles buttock implants which makes the flatter buttock more bulged. This is in addition to the undergarments equipped with elastic bands which aid in reshaping and raising of the ptotic buttock. Another feature of the previously mentioned undergarments is that they may contain beaded strings which will help fade out the skin irregularities due to cellulite giving the behind a firmer appearance. [7] Another method; which was used historically, involved the reduction of waist size via **corsages** which would falsely augment the buttock area giving it a fake bulge and volume as well as elevation.

Secondly, regular physical exercise and massaging are ought to be a modality performed by only a few. This aims to hypertrophy the gluteus maximus muscle and hence cause a stretch to the redundant skin as well as giving some volume. This method will word for mild cases. Various exercise regimens and trainings are put in practice to yield to a muscle hypertrophy. One of the trainings are squat trainings which involves adopting a near sitting position at ninety degrees around the knees and ninety degrees around the waist with or without the aid of weights. [7] It should be noted that in some cases and despite the appreciated physical fitness, yet the gluteal area is still flat. In addition, old obese individuals who lost weight and hence have not performed any physical activity for a long time. This is because the skin and the supporting fat pad were distended by weight gain and due to failure of elastic recoil they fail to re-drape to the new volume after weight loss. This makes the shape not appealing even if muscular exercise to enhance the buttock area is performed due to excess skin Figure 4.

Injectable materials for buttock contouring are of a vast variety. This aims at increasing the volume of the buttock area. Acrylic derivatives have been injected between the hypodermis and the muscle. The injection helps to reconstruct the volume of the buttock area giving it a voluminous contour. The disadvantage of this practice is that it is less sustained hence reinjection is inevitable [8]. The advantage of this technique is that it is useful in cases where the prosthesis is contraindicated. Further innovation led to the discovery of hyaluronic acid derivatives which are easy to use, but still the sustainability issue has not been solved.

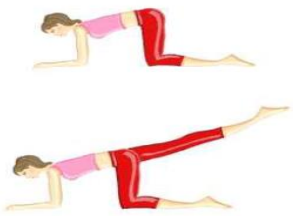

Figure (4) some of the exercises which can be established to train the gluteal muscles.

Surgical techniques:

There is a vast variety of surgical techniques which can be used solely or in combination to achieve the maximal benefit. They are gluteal implants, autologous fat grafting and dermal fat flap.

Gluteal augmentation via gluteal implants:

Implant selection for gluteal augmentation has three pre-determinants namely implant shape, implant size and texture. The decision about the implant may vary according to the plane of insertion and the final size designated. In order to judge for adequate implant shape, it is important to have a clear picture of the patient's height to width ratio in posterolateral view in addition to the volume of distribution in lateral view. [9] Short muscles having the height to width ratio of 1:1 are augmented by rounded implants while tall ones are best augmented by anatomical implants. The intermediate stage between the two can accommodate either of the implant shapes quiet harmoniously, and in this stage the lateral view is the discriminant to assess the site of fullness.

Lateral view assessment gives an idea of the aggregation of volume within the gluteal area. It can be located at upper, mid-buttock or lower buttock area. Upper bulk gluts are best augmented by anatomical implants to provide more volume to the lower pole of the area and hence balance off the defect. On the other hand, if the main bulk is situated at the lower pole, rounded implants suit this situation more. Rounded implants tend to provide more volume to the upper pole.

Implant size selection is another item to be determined preoperatively. There is an ongoing dispute amongst the surgeon and the patient with regards to size. It is always a compromise that satisfies the patient's expectations yet does not expose the patient to complications. [9] Implant texture is either smooth or textured which will be the surgeon's choice as it is postulated that textured implants reduce the rate of capsular contracture and decrease the rate of seroma by analogy to their breast counterparts, yet it will be a disaster if implant visibility occurs.

preoperative preparation starts with preoperative markings. They are meant to mark the areas of liposuction which are usually done when the patient is standing. Incision markings can also be made either at the same time or intraoperatively to identify tip of coccyx and infra gluteal crease [10]. Once the site of the incision is marked, the site of the implant is marked taking into consideration the patient's anatomy and existing deficit in addition to the desires of the patient [11].

Operative steps will start by premedicating the patient with antibiotics such as clindamycin and dexamethasone. This is in addition to pneumatic compression upon positioning. The surgery is to be done under general anesthesia. The patient is put in prone position with a pillow at the chest area and arms are positioned laterally. Draping of the patient takes place after preparing the patient with betadine from mid back to the knees with a betadine-soaked dressing placed on the anus and may be held in place with a silk suture. [9]

The incision options are numerous, initially described through a bilateral infra-gluteal incision which is used to place the implant subcutaneously. Later, and due to the visibility of the scar and the unforeseen complications of the technique, the implant was put in place through a single inter gluteal incision which had a better cosmetic outcome. With this incision being put to practice, the dehiscence rate was uprising and was not improved by changing factors such as preoperative antibiotics, modality of skin incision; whether scalpel or cautery, the number of drains and various modes of skin closure such as fibrin glue and platelet gel for skin sutures. It was not until the description of two para sacral incisions after which the dehiscence rate greatly reduced. [12]

The incision is drawn after palpating the tip of the coccyx, a line is drawn a point mid coccyx and cephalad. This incision is marked one centimeter on either side of the lower part and four to five centimeters in the upper part of that line initially drawn. The area of skin incision is injected with lidocaine and epinephrine 1:200 000. Incision starts vertical down to the gluteal fascia [9] Various approaches were described from this step onwards depending on the plane of insertion namely sub fascial, intramuscular and sub muscular planes.

For intramuscular approach dissection is continued to muscle fascia and overlying subcutaneous tissue big enough to accommodate the implant, on average 5-6 cm in circumference. The level of dissection of the pocket is at the gluteal mid-level where one would fail to set the fibers of gluteus maximus and Medius apart. The key with the pocket dissection is to keep on a 2-3 cm thickness of the intramuscular pocket below the implant to cushion the sciatic nerve. [13] after pocket dissection is concluded, next comes the implant introduction which follows securing a couple of drains though separate upper medial gluteal stab incisions. Implant introduction to the pocket dissected takes place complying to strict aseptic precautions such as changing gloves and irrigation with antibiotic solution. Closure then to conclude the procedure in layers. ***Post-operative care*** is dictated to the patient with respect to activity, where for the first 2-3 weeks the patient is prohibited from sitting and strictly laying down prone. Walking around the house is allowed with the recommendation to limit walking as much as possible. On clinic follow-ups the patient is asked to lay prone in the vehicle transporting her to and from the clinic for follow ups. Since most dehiscence was found to take place by the fourteenth post-operative day hence wounds are checked on that day. Depending on the wound status the subsequent follow-ups are designated. If the wound is progressing nicely the patient is cleared to sit and drive, where if it is marginal the patient is asked to maintain the initial instructions with regards to activity and position for two more weeks. If the wound is questionable, the patient is seen daily or every other day starting on the fourteenth post-operative day. If the wound is dehisced the patient is seen daily until the wound is table Return to regular activity usually takes place by the third post-operative week while the resume of vigorous physical activity may follow that by another three weeks if the wound status is promising. Body garment will be required if concomitant liposuction was performed. It will be worn for four to six weeks.

With regards to bathroom usage the patient is instructed to sit down with assistance for defecation and attempt urination on standing position. With regards to the drains they are to be removed if not discharging more than thirty ml per twenty-four hours which usually takes place after a week. [9]

Complications were encountered as the technique and procedure evolved over time. The sub-fascial technique which will in addition to requiring specific instrumentation carries a high risk of capsular contracture and visibility of the implant subcutaneously. Yet this technique provides least pressure on the sciatic nerve. [14] The intramuscular technique being challenging due to aspects of dissection and risk of hemorrhage not to mention the fact that these is no distal limit to lodge the implant at, it is the most recommended so far. [13] Lastly the sub muscular technique where the implant is hidden except when the contraction of the gluteal muscles take place with the risk of sciatic nerve compression especially in sitting position. The implant will be bounded by pyriformis muscle at its upper outer area. This can lead to the "double bubble" effect and hence small volumes are only available for augmentation posing a limitation. [15]

Patients with extra-large frames are more likely to encounter complications as they need larger implants and hence more tension upon closure. During operation through the para-sacral incisions sizers may be placed to determine the appropriate size at which the muscle will be most kissing when the implant is placed to decrease rate of dehiscence. [10] Wound dehiscence was greatly reduced on substituting the single inter gluteal incision by a couple of para-sacral incisions being devised at the modern technique. If dehiscence takes place, the wound should be inspected to realize whether the implant exposure took place. If the implant is not exposed leave in place and regular wound dressing is performed with wound closing completely in 1to 3 months. On the other hand, if the implant is exposed an attempt to salvage the implant is due via posterior capsular flaps.The size of the implant needs to be determined intraoperative. If a larger implant is desired an implant exchange procedure can take place 3 to 6 months after the first as the initial implant will act as a tissue expander. Infection comes next in line where post-operative infection is rare. The most likely organisms are staphylococcus aureus and streptococcus epidermidis which are skin flora, in addition to disseminated organisms of the anal canal which lies in very close proximity. If it occurs the removal of the implant is inevitable. Infections are mostly seen around the tenth to fourteenth post-operative day. If infection occurs, the implant exchange surgery may be necessary where implants are taken out and the pockets are irrigated for several days until the infection resolves. [9]

The development of seroma is inevitable, yet the use of drains has decreased the incidence rate of immediate seroma. Seroma is perceived to be the most common complication occurring in implant surgeries. It is prevented by the abidance with a compression garment for one-month post-operative in addition to the utilization of the proper size of implant to abolish dead space, at which serous fluid may accumulate. Late seroma is seen up to six months' post operatively. Late seroma has been seen with

textured implants. To treat this issue, implant may be exchanged for a smooth implant, partial capsulectomy or drainage of pus. Hematoma formation is rare due to the relative avascularity of the plane of dissection yet possible. in the case of hematoma, rapid evacuation is the mainstay treatment in addition to re-implantation after pocket washout. [11] Capsular contracture is on the list of rare complications of buttock augmentation. [9] The patient presents with pain and induration at the implant site, new onset pain and tightness of the leg and swelling. Nerve compromise has been postulated although not common. This is due to the proximity of the plane of dissection to various nervous structures.[11]In these patients, symptoms are improved with vitamin b12 and b6 supplementation as well as stretching exercises in addition to methylprednisolone and oral gabapentin if necessary, twice daily 100 mg, increasing the dose of gabapentin if necessary, after one week. Chronic pain usually does not occur. The possible justifications of pain include myositis, fasciitis, capsular contracture, nerve compression and scarring. In addition to the implant being too large and causing pain when the patient sits. This is when a recommendation of a smaller implant is necessary. Implant rotation is not an issue with round implants; however, there is a small incidence of implant rotation with anatomic implants. This can be corrected by capsulorrhaphy sutures. [9]

Gluteal augmentation via fat transfer:

The history of fat grafting has been led with the pioneer work of Sydney Coleman. He postulated the use of fat transfer to the face hands and buttocks which opened the portal to many other surgeons to follow the light of his steps.[16]. others who reported their work with fat transfer reported the successful transfer of around 200 ml of fat with no significant changes and improved outcome. [15]***Patient considerations*** with regards to who is eligible for fat transfer. Usually those patients who have localization of fat at areas such as the flanks, thighs or abdomen. [11] For that to be feasible the patient must have a considerable donor site (10). In a study it was founds that patient who cannot supply what is more than 250 ml of fat per side were complaining of post-operative unpleasing results.[11]Most buttock augmentation procedures range from grafting 600–1000 cc per buttock or 1200–2000 cc of graft able fat. Up to one-third of the fat that is harvested may become damaged during the harvesting process, meaning 1800–3000 cc must be available for the body (10). A point of consideration regarding minimizing the amount of fat destroyed in harvesting is considering the vacuum pressure applied at the liposuction procedure. Some recommendations are not to exceed the liposuction pressure more than 25mmHg. The fat "take" is totally unpredictable and there were no solid publishes to denote a certain pattern in fat take post fat transfer. Yet efforts are paid in order to decrease trauma post-operative and hence increase the fat take. [11] The patient's figure differs when judging the amount of transferrable fat needed as well as the figure of the patient is a contributing factor. Obviously, the larger the patient, the larger the required volume; in a small-framed individual, 300 to 450 cc per side will be needed; in a medium-framed person,

450 to 850 cc per side; and in large- and the extra-large framed patients, 750 to 1100 cc per side. The overall amount that can be placed will be influenced by the degree of muscle and skin laxity as well as the gluteal muscle dimensions. Large- and extra-large-framed individuals are ideal for fat transfers, given that excess fat and implant complications are far too high in this group. The challenge therefore lies in medium-framed individuals, because they may or may not have an adequate amount of fat. It is in these patients that the surgeon's estimate of the fat that he or she feels can be extracted plays a crucial role. This estimated amount may vary significantly, depending on the surgeon's experience and comfort level. If the surgeon is in doubt, the patient can be asked to gain weight. [9] This can be a challenge in the presence of a restraining operation to the Gastrointestinal tract initially devised to help the patient lose weight. ***Surgical technique*** starts with preparing the skin with povidone iodine on both the liposuction area as well as the recipient areas. Preoperative antibiotics are administered; such as ampicillin / Sulbactam, Cefazolin and Gentamycin. To follow tumescent solution prepared and pre warmed is injected at the fat donor areas. Once harvested, the fat is then quickly processed. This begins with mixing 10 cc of an antibiotic solution into each canister (200–300 cc asp. rate). The fat is placed into 60 cc syringes and centrifuged at 2000 rpm for 3 min. Any tumescent fluid is then poured off and any oil is decanted from the fat. The fat is transferred to 60 cc injection syringes. [10] If it is ought for any reason, as means of gluteal contouring, to perform liposuction of the buttocks area it is advised to perform the fat injection first prior to the liposuction. This way one will prevent the injected fat from falling though the tunnels the liposuction creates if the opposite order was performed. [17]

post-operative care for patients after fat are same as circumferential abdominoplasties or buttock lifts. If no abdominal work has been performed, the patient is instructed to sleep on her stomach for 2 weeks. This means watching TV, reading, and relaxing in the prone position. For travel to the office, patients are asked to stay in the back seat, lying on the stomach. If an abdominal procedure has been performed, postoperative care is the same as that provided for abdominoplasty patients. Patients sleep on the back, not on the stomach, it is better to tolerate some fat loss than to have to deal with abdominal skin pressure necrosis. A body garment is worn for 4 to 6 weeks, and the patient can return to work in 2 to 3 weeks and to the gym in 4 to 6 weeks. No ultrasonography of the buttock area is performed, because this can destroy fat cells. An antibiotic (such as cephalexin) is used until the drains are removed (when drainage is 30 ml or less in 24 hours). Patients may shower on the third postoperative day. The results can be evaluated in 6 months. [10] Some mild erythema; however, redness may still be difficult to discern. Over the ensuing days a localized area or a gluteus that is more swollen becomes evident, and the patient complains of increasing tenderness, especially to the touch. If this is just cellulitis, it can be treated with antibiotics; however, if an abscess is present, it will need to be drained. Usually this does not require extensive incisions; sometimes needle aspiration will suffice, along with administration of antibiotics. In other cases, if the area is not that obvious, CT-guided drain placement may be needed. If the area is

obvious, a small incision is made, and a drain is placed. The area can be irrigated daily with an antibiotic solution. If the diagnosis is uncertain, ultrasound examination or a CT scan is performed Treatment of the infection will vary in some patients, it can be managed on an outpatient basis; in others, it may require hospitalization. A word of caution: the scan may show areas of questionable fluid accumulation, but often this is just the transferred fat. Therefore, the scan must be correlated with the clinical picture. At the first sign of possible infection, or if there is any doubt, antibiotic therapy is instituted (covering for Staphylococcus, Streptococcus, Bacteroides, and Escherichia coli). [11]As regards to ***complications***, there can be no presumed complication apart from the irregularities which can rise of uneven injection. This can be overtaken at a new session of fat injection. One other dissatisfactory yet avoidable complication which can elicit is lipodystrophy. Studies following up the injected fat via magnetic resonance imaging showed a reduction in thirty percent of the previously injected volume. [18] Another study of 162 patients with approximately injected 700cc by side showed only a 20% reduction in the first 4 months and a result perennial to 12 months on MRIs performed at 1, 4, 8, 12 months in 6 patients. [19]Other authors note in its series of patients a 50% resorption and 1% Staphylococcus aureus infection, where others obtained a survival rate of adipocyte 80 to 85% at 2 years. [20] On the other hand, other Potential Complications such as incidents of sciatic nerve injury, seroma, or fat necrosis among my patients were least likely. Irregularities and lumpiness have also not been problems; the injections are deep to the muscle. Patients who are simultaneously undergoing a body lift and fat transfers must be educated on the postoperative need for ambulation. If they have poor pain tolerance and refuse to move during the postoperative period, they will sit on the dissected flaps and injected fat, creating ischemia to the areas and subsequent wound necrosis [9]

Surgical augmentation of buttock area via Adipo-cutaneous flap:

The technique inspired body lifts after massive weight loss is increasingly used for pure aesthetics due to flat buttocks and ptosis. This technique increases the volume of the buttocks, lower the gluteal ptosis and to smooth skin "wrap" in redundant lateral side of the thigh. [21] The ***history*** of the technique dates to the year 1997.It was also proposed at same year to use the fat present on lower back to give Volume and projection to little buttocks. Since the idea was fashionable again in 1997 where different techniques were described. [12] It is Lockwood's popularization of lower body lifts along with his description of superficial fascial system which form the cornerstone of today's autologous gluteal augmentation procedures. Deflated skin-fat envelope with descent of the buttocks and lateral thigh tissues, who is in good health and has realistic expectations. The patient must be counseled on the extent of scarring and postoperative expectations. [10] His original description involved correction of the lateral thigh and buttocks with anterior incision lines margin into the groin crease (type I). Lockwood's modification to include abdominoplasty with this lift also known as the type II lift. [6] ***Preoperative***

preparation starts a week before surgery, where patient would be advised to start on low residue diet to decrease frequency of defecation and volume of each. [22] Begin marking of the patient in supine position, exerting upward tension on the abdominal tissue. Markings a 6 cm mark, or till reaching above the pubic symphysis, above the vulvar commissure. The patient then stands then the superior anchor line is marked extending from the midline to the maxillary line on both sides. Pinch test used to estimate the inferior margins of resection, which are drawn as well as the lateral margins of resection. The regions of adipose tissue which will be used for gluteal augmentation are marked and symmetry is checked. At this point the patient turns to face the surgeon and marking continue for abdominoplasty. Preoperative preparation starts with administration of antibiotics one hour after incision.[6] Routine Foley catheter, warming blankets and sequential compression devices are used. Circumferential sterile prepping of the lower body is performed. [10]

Surgical technique:

Laterally, the buttock flaps are undermined, and absorbable sutures are used to shape the flaps for increased projection and gluteal augmentation. Inferior to the flaps, moderate undermining is performed in order to accommodate the buttocks flap volume. The legs are abducted to decrease lateral tension and towel clips are used to hold the wound together. Closure is performed over drains. The lateral dog-ears are temporarily stapled closed. In the supine position, the procedure continues as a traditional abdominoplasty. Attention must be paid to flexion at the waist as a high resection in the posterior body will lead to greater tension on the back wound, allowing a less aggressive anterior resection. Absorbable sutures placed in the lateral aspect of the wound to co apt the superficial fascia system (SFS) is essential. Drains are placed in the abdominal wound and closure in the usual fashion is performed. [10] It should be noted that a 1:100 000 epinephrine solution without anesthetic is infiltrated into the dermis to aid hemostasis. The region of gluteal tissue marked for auto augmentation is de- epithelialized, then circumscribed down to the fascial level. After the undermining of the paddle laterally, a subcutaneous pocket is undermined at the level of the muscle fascia inferior to the lower incision marking. Plication of the dermal surface can be done to enhance projection**.** [6]

Conclusion

The widespread bariatric surgery, which is recently used as a counter measure to obesity, created the need for post massive weight loss buttock contouring. Many techniques were described including surgical and non-surgical techniques. There isn't a universal favorable method for buttock contouring, it mostly is patient and surgeon specific.

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