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'BRAZILIAN BUTT LIFT' DANGERS

Lorna Jackson looks at why buttock augmentation with fat grafting has been named the most dangerous cosmetic op

Back in the 80s and 90s, the only things that were big and in fashion were shoulder pads. The main concern for most women revolved around the question - 'does my bum look big in this?' - hoping of course that the answer would be 'no'. Roll on to the present day and an excessively curvy-bottom is the desired look, inspired by reality TV celebrities including Kim Kardashian and female-rapper Nicki Minaj.

The trend for curvaceous female bottoms is thought to have started on the beaches of Brazil back in the 70s, where ladies regularly sport string bikinis. The desire to emulate this larger derrière, or even to simply improve on a flat buttock, has fuelled a rise in fat transfer procedures in the last few years. Targeted liposuction is used to remove fat from one area of the body, such as the abdomen, and then transfer, or graft it into the gluteal area to achieve the desired buttock enhancement.

Despite the procedure having considerable documented clinical history, the etymology of the nickname 'Brazilian Butt Lift' varies with several different reports. The late Brazilian plastic surgeon Ivo Pitanguy is

often credited with inventing the procedure¹, yet New York-based plastic surgeon, Dr Leonard Grossman MD claims to have been the source of the actual moniker having performed a fat transfer surgery on television in 1996. The patient happened to originate from Brazil and the show was titled 'Building the Brazilian Butt'.² Much of the work to hone the technique over the last 30+ years is attributed to another Brazilian plastic surgeon, Dr Luiz Toledo.³ Dr Toledo started injecting large quantities of fat in the breasts, thighs, and buttocks in 1985, with the 'Brazilian Buttock' technique first presented in 1987.

According to the American Society of Aesthetic Plastic Surgery (ASAPS), buttock augmentations (94% with fat and 6% with implants) were up by 25.5% between 2016 and 2017, with over 23,000 performed by members in the USA. The American Society of Plastic Surgeons (ASPS) also reported an uptick of 10% in 2017 compared to the previous year, and ISAPS (the International Society of Aesthetic Plastic Surgery) reported over 300,000 fat transfer buttock augmentations worldwide in 2016, a 16.5% increase on 2015. As popularity and demand has grown through the celebrity trend,

more and more plastic surgeons and specialised cosmetic doctors have started offering the procedure. Seemingly it has become a victim of its own success, to the point where an expert task force has branded it the 'deadliest cosmetic procedure' carrying the highest death rate of any aesthetic surgery. The same task force is now calling on all clinicians to urgently re-evaluate their technique and discuss the risk of death with patients.

Gluteal Fat Grafting Task Force

In 2016, the Aesthetic Surgery Education and Research Foundation (ASERF) in the United States formed the Gluteal Fat Grafting Task Force of 11 surgeons, pathologists, and statisticians to investigate the risks associated with this increasingly popular procedure.⁴ This is a multi-society group representing leading American clinical plastic surgery societies, including the ASPS, ASAPS, and ISAPS. Additionally, two scientific societies, the International Society of Plastic & Regenerative Surgeons (ISPRES) and the International

Federation for Adipose Therapeutics and Science (IFATS) are represented and provide scientific support. In stating its purpose, The Task Force explains that it is 'an unprecedented collaborative effort to address a major patient safety concern, investigate factors that lead to increased risk with gluteal fat grafting, perform scientific studies to improve safety, and educate plastic surgeons'.



Having evaluated the response data, the published findings⁵ noted that; 'despite the growing popularity of gluteal fat grafting, significantly higher mortality rates appear to be associated with gluteal fat grafting than with any other aesthetic surgical procedure'.

June to October 2016, there were three confirmed deaths in Los Angeles County alone.

Initial summation, at the time of the ISAPS survey, revolved around the preliminary conclusion that the rate of fat embolism may be increased substantially by injecting into the deeper planes, as opposed to injecting into the subcutaneous tissue and around the more superficial muscle.⁴

or preventative techniques associated with the procedure. These findings were published in the *Aesthetic Surgery Journal*⁸ and led to the adoption of the following recommendations for gluteal fat grafting:

- Avoid injecting fat into the deep muscle
- Use a >4.1 mm single hole injection cannula
- Avoid downward angulation of the cannula
- Position patient and place incisions to create a path that will avoid deep muscle injections
- Maintain constant three-dimensional awareness of the cannula tip
- Only inject when cannula is in motion
- Consider pulmonary fat embolism in unstable intra- and post-operative patients
- Review gluteal vascular anatomy and draw landmarks to identify and avoid injection into the pedicle
- Include risk of fat embolism and surgical alternatives in the informed consent process

An initial audit of global ISAPS and ASAPS members in October 2016 reported some alarming statistics.⁵ A 15-question survey queried surgeons about the number of cases performed, depth and angulation of injection, size and type of cannulae used for grafting, access and approach used, and the number of fatal and non-fatal pulmonary fat emboli (PFEs) occurring over the last 12 months and over their career. Additional interviews were performed with plastic surgeons and medical examiners and public records requested for autopsy reports in the USA. 73% of respondents came from North, South and Central America, with Europe accounting for 15%.

88.4% of respondents reported performing at least one gluteal fat grafting procedure over their career with a total of 198,857 cases across 692 responses. Reporting revealed 32 fatal PFEs, creating a career mortality rate of 1/6214 cases, with 103 non-fatal PFEs for a career rate of 1/1931. The calculated total rate of having either a fatal or a non-fatal PFE over a career is therefore 1/1473. Respondents also reported 17,519 gluteal fat grafting surgeries with 5 fatal PFEs (1/3448), 12 non-fatal PFEs (1/1449), with a rate for either of 1/1030 in the previous 12 months.

In association with surgeon interviews, autopsy reports and coroner interviews performed in the USA, it was confirmed that a total number of 25 unique fatal PFE cases had occurred over a 5-year and 9-month period from 2011 to September 2016. It has also been reported that in the five months from

So, what is going wrong?

In July 2015, a cohort of South American surgeons, who analysed the secondary deaths from gluteal fat transfer procedures performed in Mexico and Colombia over periods of 10 and 15 years, respectively, noted that a total of 413 Mexican plastic surgeons reported 13 deaths caused.⁶ In Colombia, nine deaths were documented. In the Colombian autopsy results, seven cases of macroscopic fat embolism and two cases with a microscopic embolism were reported, with abundant fatty tissue in the infiltrated gluteal muscles. They found that intramuscular gluteal lipo-injection is associated with mortality caused by gluteal blood vessel damage allowing macroscopic and microscopic fat embolism; therefore, such procedures should be performed very carefully, avoiding injections into deep muscle planes.

A systemic review of literature in September 2016⁷ highlighted that; '... avoiding gluteal vessel damage may prevent most feared complications, such as fat embolism'.

At the end of 2017, the Task Force had identified factors that either added risk or proved to be protective and/

Latest advice

In February 2018, the Task Force published yet another safety advisory guidance to practitioners.⁹ It was within this that they noted that the death rate associated with Brazilian Butt Lifts was the highest for any aesthetic procedure and recommended that every surgeon performing the procedure should immediately re-evaluate their technique.

Where patients had died, surgeons had often reported injecting into the subcutaneous fat layer. However, all available autopsies showed similar characteristics in that the deceased patients had fat in the gluteal muscles, had fat beneath the muscles, had damage to the superior or inferior gluteal vein, and had massive fat emboli in the heart and/or lungs. None of the post-mortem reports showed a case of death with fat only in the subcutaneous space. The Task Force therefore concluded that this means that surgeons have injected more deeply than they had intended, and that the mechanism of death is presumed to be high pressure extravascular grafted fat entering the circulation via tears in the large gluteal veins with subsequent embolisation to the heart and lungs.



Updating their advice, the Task Force has made other suggestions to clinicians:

1. **Stay as far away from the gluteal veins and sciatic nerve as possible. Fat should only be grafted into the superficial planes, with the subcutaneous space considered safest. If the aesthetic goal requires more fat than can be placed in the subcutaneous layer the surgeon should consider staging the procedure rather than injecting deep.**
2. **Concentrate on the position of the cannula tip throughout every stroke to assure there is no unintended deeper pass, particularly in the medial half of the buttock overlying the critical structures.**
3. **Use access incisions that best allow a superficial trajectory for each part of the buttock; avoid deep angulation of the cannula; and palpate externally with the non-dominant hand to assure the cannula tip remains superficial.**
4. **Use instrumentation that offers control of the cannula; avoid bendable cannulas and mobile luer connections. Vibrating injection cannulas may provide additional tactile feedback.**
5. **Injection should only be done while the cannula is in motion in order to avoid high pressure bolus injections.**
6. **The risk of death should be discussed with every prospective Brazilian Butt Lift patient.**

Sydney-based aesthetic surgeon, Dr Niroshan Sivathanan had this to say

about developments; *"There is no doubt that the demand for 'Brazilian Butt Lifting' or BBLs continues to exponentially increase. To dismiss this procedure as one which merely caters for people wanting large buttocks is wrong; it is more about improving contour, proportion, and shape, and it is relatively economical and elementary to perform.*

Surgeons need to ensure that in addition to appropriate consenting, they are respecting the latest guidelines insofar as minimising the risk of iatrogenic fat emboli. Whilst injecting into deeper planes may improve adipocyte-viability, it is undoubtedly safer to augment in the hypodermis particularly in the so-called 'triangle of danger' of the buttock, and the use of a larger-bore cannula improves fat-viability. I personally feel that injecting patients in the lateral decubitus position further improves safety when compared with the 'jackknife position' which is where the patient is in the prone position with pillows under the hips (hence causing the major gluteal vessels to be stretched and more taut, and therefore more vulnerable to penetration).

The use of stem cells derived from fat is a key facet of the next frontier of medicine: regenerative medicine; accordingly, liposuction and lipotransfer procedures are likely to continue unabated in their increase in frequency. It is imperative, therefore, that surgeons have invested in their training to ensure justice to all stakeholders, but especially to the patients who entrust their lives in our hands."

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