



Physical activity with hindrances: a qualitative study of post bariatric patients' experiences of physical activity in relation to excess skin

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ABSTRACT

A common side effect after massive weight loss is excess skin. Knowledge about the experience of excess skin in relation to physical activity is limited. The aim of this study was therefore to investigate how post bariatric surgery patients experience physical activity in relation to excess skin. Fifteen semi-structured interviews were performed with individuals who experienced excess skin after massive weight loss after bariatric surgery. The interviews were transcribed, and data were analyzed by qualitative content analysis. An overall theme emerged, that the body was still a hindrance for physical activity but now because of excess skin. There were major changes in the participants' ability to be active after the weight loss, but there were still obstacles and some of them remained from the time when they were obese. The analysis resulted in three main categories containing the participants' knowledge about, changes in and wishes for physical activity after weight loss, factors that affected the ability and the role of mental processes. The result contributes to increased knowledge about post bariatric patients' experiences of excess skin in relation to physical activity. After weight loss, the body was still a hindrance for physical activity but now because of excess skin. As physical activity is important for general health, excess skin inhibiting physical activity ought to be an indicator for reconstructive surgery.

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Background

Obesity is a major health problem worldwide and it is associated with an increased risk of diabetes, hypertension, cardiovascular disease, stroke, certain cancers, sleep apnoea and joint disorders [1–3]. Basic treatment for obesity involves diet and increased physical activity and training. Bariatric surgery is the most effective alternative when conservative treatment fails [4]. It provides the best effect when it comes to weight loss over time but has also positive effects on co-morbidity, including cardiovascular disease and type 2 diabetes, quality of life (QoL) and reduced mortality [2,4].

Patients' views on life after bariatric surgery has been explored in some previous studies reporting positive as well as negative effects [5–7]. The patients described that the weight loss after surgery made them feel healthier, they became more socially accepted and they could participate in desired activities to a greater extent. Furthermore, they could more easily fit into the society's norms and felt accepted. The surgery has also been described to open a new world for the patients and give them the opportunity to do things that they were not able to do when they were obese [5–7]. On the other hand, it has also been highlighted that individuals face greater demands as their world of life expands after the weight loss [6].

The bodily changes following bariatric surgery may alter the attention to one's body and how it is viewed by others [7].

Patients have described that it can be problematic and confusing trying to adapt to the new body and the new situation. These difficulties are often something which was not expected [6]. Earlier studies have found an ambivalence towards one's body and that not everyone is comfortable with the physical change which not always meet the expectations even though the surgery was done for health and not aesthetic reasons [5–7].

Excess skin is a well-known side effect after a massive weight loss [8,9]. It is most common on the upper arms, inner thighs and abdomen, but also on the back, chest, chin and knees [9,10]. In a previous study from our research group we reported that the amount of excess skin generally decreases after surgery [11]. Nevertheless, patients experience the excess skin to a greater extent, and they find it more uncomfortable after the surgery than before [10]. Both sexes experience excess skin, but women on more body parts and with more discomfort [8,9]. The excess skin is described to interfere with newly acquired physical abilities and some perceive it to be more troublesome than the obesity had been [7,9,12].

There is therefore a great demand for reconstructive plastic surgery after massive weight loss, particularly of the abdomen, arms and thighs [13,14]. Patients' motivation for reconstructive surgery is physical, psychosocial or cosmetic and they expect an improved appearance, increased self-confidence and an improved QoL [8]. However, the patients' wishes for reconstructive surgery and results of subjective assessments has minor impact on

decisions about the surgery. Instead, guidelines are built on objective measures even if there is limited evidence concerning the demarcation [15,16].

It is well known that physical activity improves health and physical activity > 150 min per week at moderate intensity or > 75 min per week at high intensity is recommended for the general population. To maintain weight loss, 200–300 min per week at a moderate level is recommended in addition to a lower calorie intake [17]. Vigorous physical exercise is advantageous after bariatric surgery and participation in exercise activities have been shown to have positive effects on weight loss [18].

Patients who have undergone bariatric surgery may not always be as physically active as they wish to be [7,9,12]. Limitations in or avoidance of physical activities due to the excess skin has been reported [9,19]. Predominately, excess skin on the abdomen limits the ability to move [9]. In addition, mental factors may affect the patients [7,9,12,19]. This was mainly experienced in public environments such as the gym or the beach and it limits the possibility of physical activity. Notable is that patients, to a large extent, seemed to avoid the same activities that they had avoided before the surgery [9].

Even though the problem with excess skin after massive weight loss is well known, patients' experiences of excess skin specifically in relation to physical activity is limited. As there is a need for increased knowledge about different aspects of excess skin to further develop the indicators for reconstructive surgery, knowledge about the relation to physical activity is important. Therefore, the purpose of this study was to investigate how post bariatric patients experience excess skin specifically in relation to physical activity.

Materials and methods

In this study, patients who had undergone bariatric surgery at Sahlgrenska University Hospital, Sweden were included. Inclusion criteria for participation were >18 years, > 1 year after surgery, weight stability, having excess skin and Swedish speaking. A majority of the participants were on a waiting list for abdominal plastic surgery and, through the snowball effect, two additional individuals were recruited.

Seventeen participants were contacted and received oral and written information about the study and fifteen gave their written consent. They were between 31 and 60 years old and twelve of them were women. There was a great disparity in physical activity levels between the participants, ranging from total inactivity to being very active. Walking was the most common form of physical activity, but the participants also performed cycling, group training of various kinds, cross-country skiing, running and swimming.

Semi structured individual interviews were undertaken based on an interview guide with open questions. The interviews were undertaken 2016–2017, recorded and transcribed verbatim.

The text material from the interviews was analysed by a qualitative content analysis by Graneheim and Lundman [20]. The authors read through the interviews several times in order to obtain a holistic picture. All statements and sentences that were relevant in relation to the purpose and questions were sorted out into meaning units which were then condensed to ease and clarify the relevance and importance of the responses. After the condensation, all meaning units were coded and sorted into subcategories and categories.

Table 1. Main categories and subcategories.

Main categories	Subcategories
Knowledge about, changes in and wishes for physical activity after weight loss	The importance of being physically active Altered physical activity after bariatric surgery The desire to be more physically active Knowledge that exercising cannot reduce the excess skin
Several factors with excess skin affect the ability to be physically active	The excess skin is in the way and is limiting the ability to move The excess skin moves, and I am constantly reminded of it Excess skin causes medical problems when exercising Concerns about the reactions of others The importance of clothes
The role of mental processes	It's all in my head Overcoming mental barriers Avoidance behaviour Physical activity with some persons works fine I do it anyway

Results

The analysis of the collected data material resulted in three main categories on how individuals experience excess skin in relation to physical activity. The main categories contain four to five subcategories each (Table 1). Each subcategory is exemplified by quotes from the interviews in italics in the text.

An overall theme emerged: The body was still a hindrance for physical activity but now because of excess skin. There were major changes in the participants' ability to be active after the weight loss, but there were still obstacles and some of them remained from the time when they were obese.

Knowledge about, changes in and wishes for physical activity after weight loss

This category includes four subcategories. The patients expressed that it was important for them to be physically active, and that the weight loss and excess skin had altered the activity level and type of activities. Several were more active than they had been before the bariatric surgery, but the excess skin was a hindrance. Most of the patients had a desire to be more active. Furthermore, they knew that training could not reduce the excess skin.

The importance of being physically active

All participants highlighted the importance of physical activity, both generally and especially after undergoing bariatric surgery. It was described as a prerequisite for feeling well, both physically and mentally, maintaining a desired weight and coping with one's work. In addition, the participants felt that physical activity could kick-start them, make them more attractive, feel good about themselves and radiate more openness and joy. They described feeling good after being physically active and also a natural fatigue. The bariatric surgery was described as a tool for losing weight, and maintaining the weight loss and returning to, or receiving an active lifestyle, through proper exercise and good nutrition. This was something most participants strived for, to not regain weight.

This is very important. This operation is nothing, no wonder drug. It is a tool I have been given to be able to lose weight initially. Maybe it's a wonder drug, but I mean I might as well gain weight again, so this is the thing with physical activity. It's the most important thing of all, or among the most important things/.../and I feel so much better from being able to move/... so this with physical activity is really important.

Altered physical activity after bariatric surgery

Most participants described that their physical activity level differed from what it had been before the bariatric surgery. Now, it was generally easier for them to move and they were more able to cope with the excess skin than before. However, it was not always easier to move and some participants were less physically active than they had been before the surgery.

The participants also described other health issues as back problems, osteoarthritis or heart problems that restricted them in their ability to move and they were thus less physically active. Other causes were lack of coordinated activities or sheer laziness.

I think about how I was before compared to where I am today, I mean the step is so huge... From having walked with a crutch and not being able to move, to walk 5 km without a problem without getting pain in the feet

I have some other problems too, I've had back surgery that is preventing me a bit from doing certain things

The desire to be more physically active

The participants had different views on their own physical activity level, some were satisfied while others were not as physically active as they wished to be due to the excess skin. However, the majority described a desire to be more physically active. Some had a previous leisure activity which they liked and wanted to keep up with and others described having found a physical activity that worked for them. But it was also described that there were still additional activities they envisioned possible but first after abdominoplasty. Some mentioned a desire to increase their physical activity but that they needed advice and help, for example, by consulting a physical therapist. A couple of the participants stated that they wanted to return to the level of physical activity they had been capable of before becoming overweight, enabling them to regain their previous personality.

It would have been better to be more physically active but you have to have time and the energy too

Knowledge that exercising cannot reduce the excess skin

During the interviews, patients described that they knew that physical activity cannot reduce the amount of excess skin. That was therefore not the purpose of their training.

It doesn't matter how much I go to the gym and exercise. I cannot remove it [the excess skin] anyway.

Several factors of excess skin affect the ability to be physically active

This category contains five subcategories. Excess skin limits the patients' ability to move during physical activity and furthermore, the excess skin itself moved, and the patients were constantly reminded of its existence. Exercising with excess skin causes medical problems of various kinds. Most of the informants avoided to exercise with other persons because of the noise and the smell it could generate. Special clothing was requested or using tights under their clothing when being physically active.

The excess skin is in the way and is limiting the ability to move

Most of the participants experienced limited mobility, because of the excess skin was in the way when they were physically active.

The excess skin was a hindrance when they moved at home, at work or during training. Many movements were restricted, mainly because of the excess skin on the abdomen. It could get in the way when bending down or reaching out for something. It was common that the excess skin got pinched and had to be lifted or moved out of the way. The excess skin was also perceived as an obstacle when cycling, the handlebar needed to be positioned high otherwise the legs were hitting the hanging skin on the abdomen on each pedal stroke. Furthermore, excess skin was noticeable during walks as it inhibited the step forward or prevented the participants from going at a fast rate. Jumping and using exercise machines were other specific difficulties mentioned.

If I go out and walk or ride a bike, then it [the excess skin] is in the way. When you sit on an exercise bike, when you pedal, the stomach, the excess skin is in the way and then it just gets extra hard because then you can't get the legs up properly either.

The excess skin moves, and I am constantly reminded of it

That excess skin moved during physical activity was something all participants highlighted, even though they expressed it in different ways. The excess skin was described as flapping, wobbling, bouncing, splashing, bobbing, jumping around and hanging. Above all, it was the excess skin on the abdomen that was the biggest concern, but some mentioned that the upper arms also fluttered. Additionally, the excess skin was described as an extra weight. Participants experienced that noise could occur when, for example, the excess skin on the abdomen hit the thighs when walking, cycling or moving. The sound and the flapping caused discomfort. One participant stated that even though his stomach was hanging before the surgery, he had not been aware of the excess skin in the same way when the body was firmer. Some participants felt that the excess skin was a constant reminder when they were physically active and that much of their thoughts circled around the excess skin.

It's wobbling and it feels generally uncomfortable simply

... I find this noise that occurs so annoying and that it's hitting against my legs all the time. When you now have thinner clothes on you get red marks on the thighs if you are jumping when the belly is hitting the thighs

The brain constantly alarms, even though I try not to think about it. But, even if I don't, in every move I do, there is an alarm signal. Don't forget you have a bit of excess skin here.

Excess skin causes medical problems when exercising

Most participants had experienced medical problems with the excess skin when they were physically active. The problems usually emerged when they became hot and sweaty. The excess skin easily became moist in the skinfolds, especially on the abdomen, which could cause itching, or give eczema, ulceration and bad odour. Moreover, the excess skin could cause pain.

It smells really. Sometimes you put some napkins or something there but you can't have that after a while. You get wounds too and it is itching

Concerns about the reactions of others

Several participants were reluctant or totally avoided being physically active together with others. This affected them in everyday activities as well as when swimming at the beach, at an indoor

swimming pool or participating in gym classes. They often felt that other persons stared at them and that made the participants feeling inhibited and subsequently avoided certain activities. Most participants expressed that they didn't want anyone to see them naked in the shower and they changed at home instead. They also described how they covered themselves with a towel or shawl to hide the excess skin when being on the beach or at an indoor swimming pool. The sound that the wobbling excess skin could cause was especially disturbing and embarrassing when being physically active together with other people. Participants also described the fear of others noticing the odours from the warm and sweaty excess skin. This was perceived as shameful, uncomfortable and/or unclear.

When I go for a workout, I change at home. I do not change there. I work out down in xxx but no shower because it is embarrassing. It wobbles, it hangs and it yes, it looks.

The fact that you do not feel so fresh as you want all the time./.../You have an extra change or extra panties, that you at least can wash during or put on something that is not sweaty because it does not smell good. It smells like you have rotten minced meat or something with you. It feels stale all the time and you don't want to be the one who they talk about what odour that one is spreading ...

The importance of clothes

Many participants described that clothing was very important, especially when they were physically active together with other people. Clothes can be a tool to either hide the excess skin or keep it in place. However, they told us that it sometimes was problematic for them to find clothes for physical activity in ordinary sport shops. Some wanted large, loose fitting clothes that hid the excess skin on their arms or that they wanted clothes that were long enough to cover stomach and thighs. Half of the participants needed to use panties, pants or tights that held the excess skin in place, one participant needed to use double tights. This to prevent the excess skin from bouncing or wobbling in everyday life, at work or during training.

When we are together and playing, that works ok. Because then you always have clothes on as well, so you have learned to tighten the whole stomach, for it to work

The role of mental processes

This category is divided into five subcategories. The participants described that emotional processes often limited them, and that they had to force themselves to overcome the mental barriers. Some described that they could be physically active by forcing themselves to be so. Furthermore, some described that they would rather avoid physically active because of excess skin but that they could be it together with friends or people they knew from before.

It's all in my head

Many participants experienced the emotional processes to be a major part of the issue concerning excess skin and physical activity. They expressed that their thoughts were often focused on the excess skin in various contexts. It was therefore more about how they experienced the excess skin themselves than how others viewed it. The excess skin was a problem when performing physical activities. How it felt and what it looked like provoked thoughts and feelings of a negative nature. Participants also thought it was embarrassing. One participant described how he

no longer knew his body and he felt that he had lost his personality. This was due to that he did not dare carrying out activities as he would have liked, he also questioned his thoughts and feelings.

On the other hand, psychologically, it is difficult because you go into a gym class ... there are mirrors and large glass windows and you always feel like this ugly duckling.

Overcoming mental barriers

Participants sometimes found it hard to motivate themselves to be physically active while their thoughts were focused on the excess skin and how to adapt the activity. The emotional process was described as difficult and something that was more or less continuous. Some had come a long way in overcoming the emotional barriers, partly by venturing out for activity after realizing that no one was watching. One mentioned no longer hiding in a t-shirt and another did not compare his/her physical ability with others. Someone felt that his/her self-confidence had improved compared to what it had been before but was still inhibited in regard to physical activities. In this endeavour, clear goals and challenges were important to some of the participants.

It takes a while. I may not get it done just when I intended to do it from the beginning, instead being an hour later or a few hours later even. But I do it. I must negotiate with myself, that you have to do that, and you have it ...

Avoidance behaviour

Some participants avoided physical activity completely due to the excess skin. Mainly, they avoided more demanding physical activity or physical exercise including gym training, swimming, running, dancing, table tennis or jumping. Two participants expressed that they were not exercising or being physically active at all anymore due to the excess skin. The excess skin was perceived to be something that was inhibiting and therefore holding them back.

Before I used to both walk in the woods, but I also went to the swimming pool or to gym training, I did that before/.../but today I am limited and I am only outdoors in nature

Physical activity with some persons works fine

In some cases, the participants experienced that it felt fine or even totally acceptable to be physically active together with other people. Either with people they knew well such as family, close friends or colleagues but also with total strangers around them as when being abroad on vacation. Some participants had friends with similar problems who were understanding, and they were therefore able to be physically active together. One participant did not experience any problems at all being physically active together with other people.

I don't go to work out with others, because I think it becomes too difficult. I train alone or maybe with a friend who also has similar problems but not in any major groups

I do it anyway

Many participants stated that physical activity in some contexts and environments was difficult, but despite that, they should not allow this to become an obstacle for them to be active. Some

participants tried to think of the excess skin as not being there and continued to be physically active even if it did not work out as they had wished. They described that you must bite together and be headstrong.

I try to overcome it. It is not always easy in all situations

Discussion

The result lead to three main categories on how individuals who have undergone bariatric surgery experiences excess skin in relation to physical activity. Previous studies have shown that weight loss after bariatric surgery results in increased quality of life, in positive effects on co-morbidity and that it increases the patients' energy and physical ability [2,4]. This may possibly be a truth with modification when taking excess skin into account. The results in this study note that participants' physical activity level is disparate, that it has changed and that the activity level is affected to varying degrees by the excess skin. Some experience a great difference in their ability to move and they are now more physically active, which has previously been shown in studies by Wiklund et al. [12] and Natvik et al. [6,7]. On the other hand, others have reduced their physical activity compared to before the bariatric surgery because of the excess skin. As in previous studies, the results show that excess skin can interfere with the newly acquired bodily ability [7]. It is therefore of importance to also consider the impact of the excess skin on the ability to be physically active when deciding the need for reconstructive surgery,

Participants describe the bariatric surgery as a tool to lose weight and some of them describe how they want to find their way back to an active lifestyle to maintain their reduced weight. Previous studies have shown that physical activity and healthy eating habits after bariatric surgery contributes to weight stability and good health [17]. Furthermore, physical exercise has been proven to be an important component for continuing weight loss and maintaining it in the long term after bariatric surgery [18]. All participants in this study emphasise the importance of physical activity. In line with the aforementioned research, participants describe that physical activity is a prerequisite for feeling good both physically and mentally, maintaining weight and being able to do their job. At the same time, it appears that some of the participants in this study wished to be more physically active than they were at the moment. Some also required advice and help with adapted physical activity by, for example, a physical therapist. Similar findings are also noted in the study by Wiklund et al. [12] where participants state that they find it difficult finding a good level regarding their physical activity and that they would like to receive guidance.

The results demonstrated that there is a great physical impact as a result of the excess skin. As previous literature has shown, the physical change after bariatric surgery does not always correspond with the expectations of the individuals [5-7]. Virtually all participants in the study described how the excess skin moves, and that the excess skin is flapping, or wobbling are common descriptions. The word "flapping" is a commonly used description in the literature that reflects how the excess skin moves [19]. One aspect that has not been addressed to such an extent before is that the excess skin produces noise when, for example, the abdominal excess skin strikes against the thighs during physical activity. The sound is a contributing factor to inhibiting physical activity, especially when they are physically active together with others. Participants also worry that others may notice the odour

that may arise when they become hot and sweaty in conjunction with physical activity.

Baillot et al. [19] found that individuals with excess skin are limited in their ability to move, and similar findings were made in this study. The participants described how the excess skin was an extra weight and that it could be painful, which also has been described earlier [13]. Many movements are restricted and difficulties using exercise machines are also mentioned by the interviewees.

Generally individuals participate more extensively in social activities and feel that they fit in more easily after bariatric surgery [5-7]. In this study, however, it was perceived that participants may find it difficult with social contexts which are linked to physical activity. In some cases, individuals completely avoided being physically active together with other people. This includes, among other things, concern about the reactions of others and awkward environments. The feeling of being stared at when being physically active or when they are in a given environment is something that the majority of the participants are experiencing. This is in line with the experiences of individuals in previous studies [7,9,19]. In this way, clothing becomes important partly to hide the excess skin, but also to keep it in place when they move.

In addition to the physical and social aspects, the results also indicate that psychological and emotional processes are central. The participants experience that the excess skin is a constant reminder when they are physically active. It is not uncommon for individuals who have had bariatric surgery to become more aware of themselves and their bodies [7]. Some participants emphasise that a lot of the problem with the excess skin is about their own feelings and thoughts regarding the skin. The excess skin often evokes negative thoughts and the participants feel uncomfortable. This is in line with the results from previous studies [7]. Although the individuals have had excess skin prior to the bariatric surgery, they appear to be more aware of it after the surgery [10].

A positive aspect is that the participants stated that they work towards overcoming their emotional barriers. It was not always easy to be physically active, but after emotional processing, they still succeed in some cases. However, the participants handle the affects the excess skin has on their physical activity in different ways, some avoid it completely, and others bite together and do it anyway. The positive effects of physical activity in general is well known as well as its effects after bariatric surgery to maintain weight stability [15]. It is therefore of importance to facilitate physical activity after bariatric surgery and additional reconstructive surgery may here play an important role.

The sample in this study mainly consisted of patients who were on the waiting list to have abdominal plastic surgery. This is a patient group that could possibly have something unique or special to share, regarding the experience of excess skin. However, when interpreting the result it is important to remember that it reflects the experience of physical activity in relation to excess skin for those patients who have sought help for their excess skin and cannot be generalized to all post bariatric patients.

Conclusion

The results of this study contribute to increased knowledge about post bariatric patients' experiences of excess skin in relation to physical activity. A complex problem that limits their physical activity in daily life, both physically, mentally and socially. In summary, after weight loss, the body was still a hindrance for physical activity but now because of excess skin. As physical activity is

important for general health, excess skin inhibiting physical activity ought to be an indicator for reconstructive surgery.

Ethical approval

The study protocol was approved by the Regional Ethics Committee for the region of Västra Götaland, Sweden. (Registration number: 723-08).

Informed consent

The patients were included after written and oral information was given and written consent obtained.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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