



Long term self esteem assessment after height increase by lengthening and then nailing

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The purpose of the study is to assess the long term psychosocial functioning after height increase, using the external fixation then nailing method. Rosenberg Self-esteem scale and a questionnaire to assess social functioning were completed by 28 patients both preoperatively and at a mean follow-up of 7 years.

The mean total score of RSE self-esteem for the 28 patients before lengthening was 21.5 (SD 1.03) (20-24). The mean total score of RSE for the patients 1 year after lengthening was 22 (SD 1.17) (20-24) with highly significant difference ($p = 0.002$). The mean total RSE self-esteem score after 7 years was 21.7 (SD 1.12) (21-25) with no significant difference ($p = 0.11$)

Improvement was an evident in the short term self esteem after 1 year of follow up of the patients with height increase. On the other hand, there was an evident deterioration in the long term psychosocial evaluation during follow up after 7 years of height increase, returning to near pre-operative levels of self esteem.

Keywords : Height increase ; lengthening and then nailing ; psychosocial ; self esteem.

INTRODUCTION

Some individuals are short (<170 cm in men or <160 cm in women), yet they are not handicapped from the medical point of view. These individuals can drive a car, sit on a chair, take a bus, and use regular furniture/appliances, yet they request to undergo surgery for height increase for purposes such as social/ psychological factors, job requirements or self-image (4,13).

Limb lengthening surgeries could be associated with different complications including pin tract infection, malalignment, joint subluxation, non-union and neurovascular injuries. It also represents a financial burden, not being covered by health insurance, as it is considered to be a cosmetic surgery. Despite the previous drawbacks, patients attempt to undergo this surgery in order to achieve their psychological/social aims from height increase such as job requirement or self-image.

Limb lengthening for height increase can be done using different methods including : conventional limb lengthening by ilizarov external fixator, lengthening over nail or lengthening and then nailing.

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Previous evaluations of the outcome after limb lengthening have mainly concentrated on clinical and radiographic results rather than psychological and social functioning aspects (2,10,14).

Some authors have reported on pain perception, satisfaction and physical appearance shortly after limb lengthening, but there is a lack in literature regarding the long-term follow-up (6-8,11,14).

In our study we measure the long term psychological functioning after height increase using the ilizarov and then nailing technique.

PATIENTS AND METHODS

This is a retrospective study which was conducted to evaluate the self esteem and the psychosocial assessment of patients who had lengthening and then nailing for height increase not due to real short stature affecting their daily life activities but need lengthening and height increase for a social target like sports activity, marriage or job....., etc..

Between November 2001 and November 2007, we performed Ilizarov limb lengthening and then nailing operations for 26 men and 6 women(5) for height increase. These patients underwent psychological examination prior to surgery revealed them to be free of Body Dysmorphic Disorders (BDD) and other related psychological disease. All patients included in the study are normal from psychological point of view and medical or physical point of view. Only 28 patients, out of the total of 32 patients who had undergone surgery, were included in the study.

Inclusion criteria are shown in table 1

Patients were excluded if they had any systemic disease affecting bone healing, bone deformity, infection, limb length discrepancy, a history of previous height-increase surgeries (Ilizarov technique, unilateral external fixation, or femoral lengthening) or any other orthopaedic surgeries. Patients were also excluded upon their refusal to be included in the study. One patient was excluded from the study due to pin tract infection and his intramedullary nailing was cancelled. Three patients refused to participate in the study because they

Table 1. — Inclusion criteria of study

Inclusion criteria
– Skeletally mature patients
– Healthy individuals with no systemic or local bone disease
– Patients < 160 cm in female and <170 cm in male
– Patients had height increase
– Patients 'acceptance to be involved in the study

did not want to be reminded of the period of limb lengthening or because they were too busy. Thus 28 patients are included in the study.

Self-esteem

In the psychological assessment, both, before the procedure and during follow-up, we used the Rosenberg self-esteem scale (RSE) to measure self-esteem (12). This questionnaire can be used for both children and adults. The RSE is a 10-item self-reported scale with a 4-point Likert scale (3). The total score is derived from a simple summation of the 10-item response values. Higher scores indicate higher self-esteem. Psychometric qualities of the RSE are good (reliability ranges between 0.85 and 0.93) (3,12).

We measured RSE for all 28 patients before lengthening, 1 yr after lengthening and 7 years after lengthening.

In our questionnaire we added some questions in addition to RSE to be answered with a yes or a no as : “Were you happy with the length gained?”, “Do you believe that you have made the right choice in undergoing this surgery of height increase?”, “Would you recommend this surgery for friends or acquaintances?”, “Did this operation of height increase have a positive impact on your social life?”, and “Did this operation of height increase have a positive impact on your career?”.

Data and results were analyzed via IBM SPSS statistics (V. 22.0, IBM Corp., USA, 2013).

The following tests were done :

1. Comparison between two independent mean groups for parametric data using Student t test.
2. Comparison between 2 dependent groups for parametric data using Paired t test.

The probability of error at 0.05 was considered sig., while at 0.01 and 0.001 it was considered as highly sig.

RESULTS

Records of the 28 patients with body heights ranging from 160 cm to 176 cm (mean, 170 cm ; SD, 4 cm) and who underwent tibial and fibular lengthening, then intramedullary nailing height increase, were reviewed. The mean lengthening achieved was 7.6 (SD, 1.7 ; range, 3.5-12) cm or 26% (range, 10-40%) of the original length of the lengthened bone. The mean duration of external fixation was 96 (range, 45-135) days.

Self-esteem

The mean total score of RSE self-esteem for the 28 patients before lengthening was 21.5 (SD 1.03) (20-24). The mean total score of RSE for the patients 1 year after lengthening was 22 (SD 1.17) (20-24) with a highly significant difference ($P = 0.002$). The mean total RSE self-esteem score after 7 years was 21.7 (SD 1.12) (21-25) with no significant difference ($P = 0.11$). (Figure 1)

As regard satisfaction with the length gained, 20 patients were satisfied both 1 year and 7 year postoperative while 8 was unsatisfied either 1 year, and 7 years post operative. These eight patients showed no significant differences their scores at one year ($P = 0.3$) and seven years ($P = 0.24$) postoperative. (Figure 2)

Three patients considered that they had made the right choice in undergoing this surgery of height increase, while 25 patients didn't consider themselves to have made the right choice in choosing this surgery neither in 1 year, nor in 7 years postoperative. These 25 patients showed no significant differences their scores at one year ($P = 0.74$) and seven years ($P = 0.85$) postoperative. (Figure 2)

Seven patients recommended undergoing this surgery for friends, while 21 patients did not do so, neither in 1 year, nor in 7 years postoperative with no significant difference, 1 year ($P = 0.6$) while 7 years ($P = 0.4$) (Figure 2)

Four patients reported a positive impact on their social lives after cosmetic lengthening, while 24 patients didn't report any positive impact on their social lives after cosmetic lengthening neither in 1 year, nor in 7 year postoperative with no significant

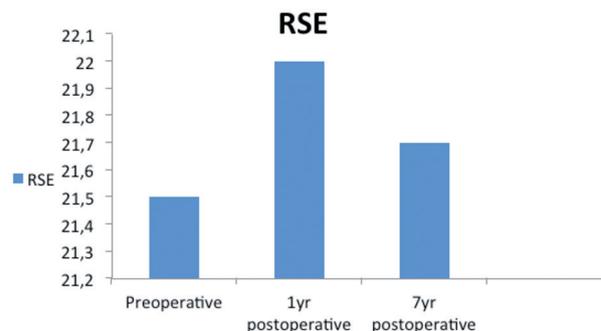


Fig. 1. – RSE score before surgery, 1 year after surgery and 7 years after surgery

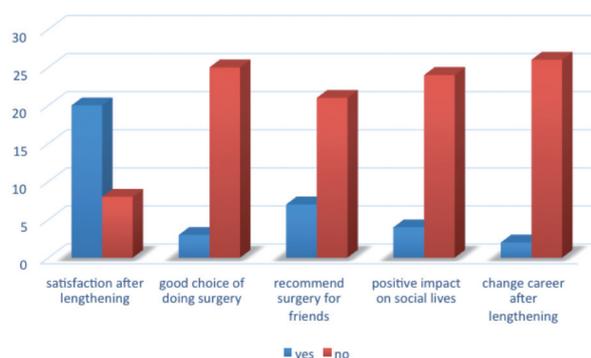


Fig. 2. – Results of other questions in the questionnaire.

difference, 1 year ($P = 0.915$) while 7 year ($P = 0.92$) (Figure 2)

Two patients only reported a positive impact on their career after cosmetic lengthening for height increase either in 1 year or in seven years postoperatively while 26 patients did not report any positive impact on their careers with no significant difference in positive impact between 1 year ($P = 0.255$) and 7 years ($P = 0.143$) postoperatively. (Figure 2)

DISCUSSION

There are some studies discussing the psychological follow up after ilizarov limb lengthening in the management of limb length discrepancy but there are none discussing the psychological follow up after height increase. Our study is the first one to assess the long term psychological follow up in normal individuals who

underwent height increase with lengthening and then nailing technique. We did our questionnaire before surgery, one year and then seven years after the end of height increase.

In our study we used a questionnaire which includes the Rosenberg self esteem scale in addition to some questions which have a wide range of domains of psychosocial functioning.

From our results we found that there is a significant improvement of self esteem of the patients 1 year after height increase. On the other hand, there was an evident deterioration in the long term psychosocial evaluation during follow up after 7 years of height increase, returning to near pre-operative levels of self esteem. Our explanation is that the patients are happy at first that they achieved their goal of getting taller and finished a long process of surgery and follow-up but after few years the patients go back to normal life and realize that it did not change a lot regarding their self image or daily life or relationships.....etc.

Also, from our questions only three out of twenty eight patients accepted to undergo surgery once more and seven out of the twenty eight patients recommended undergoing the surgery for their friends. This shows the lack of improvement in the long term psychological follow up after height increase.

Improvement in physical functioning over time after an Ilizarov limb lengthening procedure was described by Barker et al. ; recovery was slowest at the early stages after removal of the frame and greatest between 6 and 12 months of the frame removal ; improvement continued up to, but not beyond, 24 months (1). Ramaker et al. concluded from their study that there are no short-term physical benefits of the limb lengthening procedure, and almost a quarter of the children still had complaints about their leg. These authors stated that the rationale of the procedure is to prevent handicaps in the long run (11).

The only previous study of long term psychosocial follow up after 7 years form limb lengthening was done by Moraal et al in 2009 but for patients with Limb Length Discrepancy (LLD) lengthened by ilizarov, in this study patients still had physical restraints, but they appeared to have normal psycho-

social functioning, self-esteem, and perceived competence (8).

The end result was that despite having the patients undergo a surgery with a risk of complications and a financial burden, they didn't improve significantly in the long term (7 years after height increase) regarding their psychosocial functioning, compared to their pre-operative levels.

CONCLUSION

There was improvement in the short term self esteem after 1 year of follow up of the patients with height increase. On the other hand, there was an evident deterioration in the long term psychosocial evaluation during follow up after 7 years of height increase, returning to near pre-operative levels of self esteem.

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