Penis lengthening – A retrospective review of 300 consecutive cases

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> **RH Stubbs. Penis lengthening – A retrospective review of 300 consecutive cases. Can J Plast Surg 1997;5(2):93-100.** Between November 1993 and July 1995, 300 patients underwent penis lengthening surgery. Twelve of these patients had previous genital surgery and/or congenital anomalies, and their procedures could be considered reconstructive. The remaining surgical procedures were cosmetic. Average patient age was 37 years (range 18 to 74 years). The average preoperative erect length was 12.5 cm (range 7.5 to 16 cm, SD 1.5). 'Locker room phobia', adverse female comments and body disproportion were common reasons for patients desiring surgery. All racial groups were represented, with European ancestry the most common. Surgery involved releasing all the superficial (fundiform) ligament and most of the deep suspensory ligament. The defect was filled with plicated gracilis muscle along with shifted skin and subcutaneous tissues. Postoperative traction was used to reduce the chance of scar and penis retraction. The most common major complication was wound infection (5.7%). The most frequent minor problem was dermatitis (13%). Long term (mean 10 months, range six to 18 months) objective measurements using the stretch technique were obtained for 42 patients. One patient lost 1 cm in length, while 41 gained length (mean 3.2 cm, range 0.5 to 6 cm). Poor patient compliance with the postoperative protocol appears to be the most significant factor limiting the success of the procedure.

Key Words: Cosmetic, Penis length, Surgery

Allongement du pénis B rétrospective de 300 cas consécutifs

RÉSUMÉ: Entre novembre 1993 et juillet 1995, 300 patients ont subi une chirurgie pour allongement du pénis. Douze de ces patients avaient déjà subi une intervention chirurgicale ou souffraient d'anomalie congénitale et leur intervention pouvait être considérée reconstructive. Les autres interventions étaient d'ordre esthétique. L'âge moyen des patients était de 37 ans (entre 18 et 74 ans). La longueur moyenne du pénis avant l'intervention était de 12,5 cm (de 7,5 à 16 cm, é.-t. 1,5). La «phobie du vestiaire», les commentaires défavorables adressés par des partenaires et une disproportion ont été les raisons les plus courantes invoquées par les patients qui souhaitaient se faire opérer. Tous les groupes raciaux étaient représentés, quoique l'ascendance européenne ait été plus fréquente. La chirurgie mettait en jeu le dégagement complet du ligament superficiel (fundiforme) et de la majeure partie du ligament suspenseur. L'anomalie était comblée par le muscle droit interne avec déplacement des tissus cutanés et sous-cutanés. La traction post-opératoire a été utilisée pour réduire les risques de cicatrice et de rétraction péniennne. La complication majeure la plus courante a été l'infection de la plaie (5,7 %). Le problème mineur le plus courant a été la dermatite (13 %). À long terme (en moyenne 10 mois, soit de 6 à 18 mois), les mesures objectives à l'aide d' une technique d'étirement ont été obtenues pour les 42 derniers patients. Un patient a perdu 1 cm de longueur, alors que pour 41 l'intervention a réussi (gain moyen de 3,2 cm [entre 0,5 et 6cm]). La piètre observance des patients au protocole postopératoire semble avoir été le principal facteur limitant la réussite de l'intervention.

Many normal adult North American men would prefer to have a longer penis. The penis is the ultimate symbol of virility. To improve self-esteem, some men desire a larger penis, a desire that is similar, in many respects, to that of women who want breast augmentation (1).

Until recently, there has been no treatment available for the normal mature male who wished a longer phallus. Children with micropenis respond to testosterone therapy (2), but adults appear resistant. Cosmetic phalloplasty has been performed in the Orient for over 20 years (3,4). In Canada and the United States, this is still a new and controversial procedure. The controversy has been compounded by the aggressive marketing of various penis augmentation procedures in North America by some surgeons, without adequate followup and peer review.

Western medical literature has reported reconstructive penis lengthening techniques for more than 35 years (5-25). There are only a few papers on cosmetic enhancement (26,27).

This report is a retrospective study of 300 consecutive penis lengthening procedures performed by the author.

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Figure 1) Age distribution of patients. Average age was 37 years, range 18 to 74 years



Figure 2) Preoperative, trimix-induced erect length distribution for 291 men (nine patients did not respond to the medication). Average length was 12.5 cm, range 7.5 to 16 cm

PATIENTS AND METHODS

Preoperative

Between November 1993 and July 1995, over 1000 men were seen in consultation for penis lengthening surgery. A total of 300 patients were chosen and underwent surgery. Twelve patients had previous genital surgery and/or congenital anomalies, and their procedures could be considered reconstructive. The remaining 288 procedures were cosmetic.

As with other cosmetic procedures, these patients were seen at least twice before surgery. All had a complete physical examination by an independent physician and all received an extensive informed consent. No attempt was made to encourage any patient to have surgery. The first 211 patients were told that the surgery was experimental because there had been insufficient peer review. (A paper on the first 200 cases was presented at the 21st Annual Meeting of the Canadian Society for Aesthetic [Cosmetic] Plastic Surgery [28].)

At the first consultation, patients were told whether they were acceptable candidates for surgery. A candidate had to be healthy (pass the physical), close to his ideal weight, a nonsmoker and have realistic expectations about the results



Figure 3) A The inverted V-Y technique (n=165) produces poor proximal shaft coverage because the flap is bulky and hirsute. B The horizontal-vertical technique (n=60) produces better skin coverage but hypertrophic scars, should they form, are obvious. C The tripod technique (n=73) produces the best cosmetic result when combined with the proper use of postoperative traction. Two patients had modified closures that did not fit the above classifications

of surgery. Patients from health care fields and those with postsecondary school education were given priority. Age, race and sexual orientation were not limiting factors. None was promised any specific length increase.

All patients except five underwent surgery in a private ambulatory surgical facility. Those admitted to hospital included a diabetic patient, a hypertensive patient, a geriatric patient, a burn-scarred patient and a hepatitis B-positive patient.

Of the 300 patients who had surgery, all racial groups were represented, with European ancestry the most common. Average age of patients was 37 years, range 18 to 74 years (Figure 1). A total of 38% were or had been married, 41% had fathered at least one child and 5% were homosexual.

Many patients expressed anxiety about being undressed in front of other men. This concern is best summarized by the term 'locker room phobia'. Others, especially athletes and body builders, were unhappy with their body proportion (small penis relative to large mesomorphic body). A significant number (27%) had been criticized about their small penis size by female sexual partners. Most patients felt that their self-esteem would improve with a larger phallus.

Operative

The surgical goal was to externalize a portion of the internal penis without damaging function. Postoperative patient feedback stressed the need for providing not only a longer penis, but also one whose shaft is covered by thin elastic nonhairbearing skin; this result is now considered essential.



Figure 4) The superficial (fundiform) suspensory ligament of the penis. The arrow marks the superior pubic origin which is a continuation of Scarpa's fascia

Most procedures were performed with intravenous sedation and the use of a neuroleptic (diazepam and ketamine) combined with local anesthesia (lidocaine/bupivacaine mix). Minimal shave preparation, marking and induction of an artificial erection with a vasoactive trimix (phentolamine/papaverine/alprostadil) injected into a corpus cavernosum were performed just before surgery. The erect length (dorsal base to tip, with patient supine and penis perpendicular to the patient's horizontal axis) was then measured and photographed. Average preoperative erect length was 12.5 cm (range 7.5 to 16 cm, SD 1.5) (Figure 2). A prophylactic antibiotic (cefazolin) was administered intravenously before sedation.

Exposure of the suspensory ligament system was through an inverted V-Y incision (the 'Oriental flap technique'), a horizontal-vertical incision or a tripod skin incision (Figure 3). The superficial ligament (Figure 4) and all surrounding fascial bands were completely released. Dartos muscles fibres to the shaft, which run with these bands, were thereby weakened. Further corporal mobilization was obtained by releasing most or all of the deep suspensory ligament. The arcuate ligament, which lies above and protects the neurovascular bundles, defines the limit of the transection. The deep



Figure 5) Top Normal anatomy. Bottom Healed postoperative result. The increased length is obtained by releasing the suspensory ligament and opening the angle. The further the penis moves from the symphysis, the larger the gain. NVB Neurovascular bundle



Figure 6) Self-adhesive lead weights were one device used for postoperative traction. They rely on gravity and work best in the standing position. Frequent travellers have difficulty with airport metal detection devices

release was buttressed by plicating the gracilis muscle on either side across the midline. Skin and subcutaneous tissues were then advanced to obtain closure and fill the remaining defect (Figure 5). Care was taken to protect the spermatic cords and the ileoinguinal nerve branches. The blood supply to the shaft skin is axial (29). These axial branches from the external pudendal artery should also be preserved.

Swelling and ecchymosis were limited by the use of suction drainage, self-adhesive shaft wrap and an athletic support over the dressing. Patients were observed for at least 3 h before discharge. For comfort, bupivacaine was injected retrogradely along the drain tubing before departure.

Postoperative

Patients received oral analgesia, diazepam (to reduce painful nocturnal erections) and cephalexin (seven-day course). Bed rest was encouraged. All patients were seen the day after surgery for drain removal and a dressing change. Bathing and gradual ambulation usually commenced on the third postoperative day. Skin sutures were removed at seven to 10 days after the operation.

Penile traction using lead weights (Figure 6) or an elastic



Figure 7) The elastic traction device was also used for postoperative traction. It functions in all positions and can be used at night. The amount of traction is less precise and some patients have difficulty securing it to their penises

device (Figure 7) was started at approximately two weeks postoperation or when the incisions were well united and there was no shaft edema. Wrapping the shaft with selfadhesive stretchable material both night and day for the first two weeks helped reduce or eliminate edema.

Traction was gradually increased and continued until the cutaneous scars were mature (four to six months postoperation). Rigorous physical and sexual activities were discouraged in the first month postoperation. Follow-up was every two months after the traction protocol was mastered. Patients were encouraged to return for a six-and 12-month assessment.

RESULTS

Postoperative visits, complications, revisions and objective measured results – in the form of a chart review – were assessed at least one year after surgery. (The findings were presented at the 23rd Annual Meeting of the Canadian Society for Aesthetic (Cosmetic) Plastic Surgery [30].)

The average number of postoperative visits (n=300) was nine, range two to 30. Out-of-town patients were encouraged to telephone if they had any concerns or problems; they did so frequently but only their visits were recorded in the above average. Men sought help most frequently for complications, difficulty with the traction protocol or both.

Complications were considered major if they were chronic, required urgent attention or needed referral (Table 1). Minor complications were self-limited and/or easily treated (Table 2).

Wound infection was the most common major complication, and *Staphylococcus aureus* was cultured most often. Treatment consisted of drainage, dressings and ciprofloxacin. All cases were managed as out-patients.

Erectile dysfunction was more common than had been anticipated. One patient developed organic erectile dysfunction (impotence) as a result of delayed priapism treatment. Other men with erectile dysfunction (n=10) either admitted to preoperative difficulties or were investigated and diagnosed with psychological difficulties (one patient lost to follow-up).

Priapism was a side effect of the trimix preoperative intracorporal injection. Most men detumesced spontaneously in the recovery room. Some required pharmacological (31) and/or aspirative detumescence.

Only one postoperative patient required hospital admission. A 35-year-old Oriental man was transferred the day after surgery with hypertension and a tension hematoma. Preoperatively he denied taking any medication, but later admitted to taking Chinese herbal medications up to and immediately after surgery.

Dermatitis was the most common minor complication. It was caused by either an allergic reaction to the wrap or an exacerbation of a low grade fungal infection ('jock itch').

Wound healing and the start of the traction protocol were most often delayed by partial dehiscence or flap tip necrosis. Debridement and dressing care usually resulted in healing by secondary intention within a few weeks.

Revisional procedures were offered to men at least six months after surgery if they had unfavourable scars and/or bulky redundant flaps. Patient dissatisfaction with the appearance of the original Oriental flap technique (inverted V-Y) (Figure 8) prompted the author to use other incisions later (Figures 9,10), which, along with the traction, improved the cosmetic result. Forty per cent of those who received the V-Y incision (n=165), 8% who received the horizontal-vertical (n=60) and 4% who received the tripod incision (n=75) opted for a cutaneous revisional procedure.

Obtaining precise measurements of an organ that fluctuates in size presented a problem for both the author and the patient. Flaccid measurements were unreliable. Erections obtained pharmacologically were easily measured and could be reproduced again postoperatively with the same medication. Unfortunately, because of the discomfort of the injection and the risk of priapism, very few men volunteered for this test at their long term follow-up visit. No patient was able to produce a spontaneous erection on demand. Intraoperative measured gains were taken initially but soon became meaningless because postoperative healing and traction factors altered the result.

Eventually the stretch technique (32) was chosen because

TABLE 1: Major complications of patients (n=300) undergoing penis lengthening

Туре	Number of patients (%)
Wound infection	17 (5.7)
Erectile dysfunction	12 (4)
Priapism	5 (1.7)
Depression	4 (1.3)
Lymphedema	3 (1)
Impotence	1 (0.3)
Tension hematoma	1 (0.3)
Intraoperative hemorrhage	1 (0.3)
Paraphimosis	1 (0.3)
Intraoperative drug reaction	1 (0.3)
Recovery room drug reaction	1 (0.3)
Urinary retention	1 (0.3)
Phimosis	1 (0.3)
Penis ischemia (tight wrap)	1 (0.3)
Keloid	1 (0.3)

TABLE 2: Minor complications of patients (n=300) undergoing penis lengthening

Туре	Number of patients (%)
Dermatitis	39 (13)
Partial dehiscence	23 (7.7)
Hypertrophic scar	21 (7)
Partial flap necrosis	20 (6.7)
Minor abscess (pilonidal, folliculitis or suture)	9 (3)
Minor hematoma	5 (1.7)

it was the easiest and safest to obtain and reproduce. For this technique, the patient performed his own pre- and postoperative measurements. A ruler was placed along the left shaft of the penis and pushed into the left base of the penis until it met resistance. The glans was then grasped and the penis stretched out to length for the measurement. These lengths were obtained in 42 men with sufficiently long follow-up (mean 10 months, range six to 18 months) that the results appear relevant. Forty-one men gained length (Figure 11) and one patient lost length. The average increase was 3.2 cm. There appeared to be a direct correlation between the patient's level of compliance and amount of length gained. The one patient in this series who lost length (1 cm) was a habitual smoker who had great difficulty with the traction protocol.

DISCUSSION

The vast number of patients who sought information and the more than one thousand men who were seen in consultation for penis lengthening surgery indicate a need to address the problem of small penis size. The anxiety expressed by these



Figure 8) A single 38-year-old patient shown before (left) and 13 months after (right) the V-Y technique. Upper right Scrotalization and abnormal proximal shaft skin are seen; Lower right A stretch gain of 3.5 cm is demonstrated



Figure 10) A single 18-year-old patient is shown before (**left**) and 20 months after (**right**) the tripod technique. **Upper right** No shaft scar and normal hair distribution are demonstrated; **Lower right** A stretch gain of 2.5 cm is depicted



Figure 9) A married 63-year-old patient shown before (left) and 26 months after (right) the horizontal-vertical technique. Upper right An acceptable shaft scar and normal hair distribution are seen; Lower right A stretch gain of 6.0 cm is shown

men from all cultural and socioeconomic groups was real. Insecurity about their penis size had haunted them since puberty, and the possibility of alleviating that anxiety surgically was an option many wanted. Operative discomfort was much less of a concern than the psychological pain that they had endured.

The physical features that identify the mature male are height, muscular development, hirsutism, testicular size and penis length. Psychiatrists and physicians involved in male counselling have long been aware of the profound effects that a small penis can have on a man's body image and selfesteem (33,34). Plastic surgeons have been less aware of this problem.

Cosmetic phalloplasty is a new and controversial procedure in North America. Although cosmetic breast surgery to enhance female sexuality and self-esteem has become acceptable and popular for over 30 years, the male equivalent – penis lengthening – is an entirely new field for western plastic surgeons.

The Chinese technique (3) described by Dr Long, a Wuhan professor of plastic surgery, was observed by the author in 1993. Dr Long advances pubic skin (M and inverted V-Y techniques) into the defect created by the ligament release. This may work well for the Asian male, who is generally leaner, less hirsute and lighter framed than his western counterparts. The procedure and the after-care had to be modified by the author for treatment of men in North America. Ligament release in the western patient left too deep a defect to be filled simply by the more superficial tissues; therefore, gracilis muscle was plicated to obliterate the deeper dead space. Western men are also much more concerned about the final cosmetic appearance. They want length and minimal or no evidence of surgical intervention. Scrotalization (35) and thicker hair-bearing pubic skin on the proximal new penis, characteristics of the inverted V-Y technique (Figure 8), were unacceptable to most patients.

Traction was used by the author to prevent the ligament from reattaching to the symphysis during the early myofibroblast healing phase. It was also noted that the shaft skin would stretch over the healing period with weight and/or elastic use. Based on this observation, the skin closure technique was gradually changed from the inverted V-Y to the horizontal-vertical and then to the tripod incision and closure.

The horizontal-vertical technique kept pubic skin in its normal location but had the disadvantage of a potentially visible proximal shaft scar. The tripod technique keeps all the scars hidden in the hair but relies much more on the proper and extended use of traction.

The rationale of the procedure is to gain more visible (external) penis length. Lengthening, in a sense, is a misnomer. Penis exposure might be a more appropriate term. Increased penis exposure is most evident in the flaccid state. In this position, the released segment is furthest from the symphysis. The erect penis, if placed back up and along the symphysis, will have no apparent increase. After release, the angle of the erection is less acute. The glans points more perpendicular versus cephalad. The base of the penis (penopubic junction) is more caudally positioned or exposed, and extra length is thereby visible.

The erect gain is never as much as appears in the flaccid state. In order to achieve an equivalent erect gain, the release would have to be so extensive that the erect angle would be rotated from cephalad to caudad, and function would be severely compromised.

The flaccid gain is enhanced by the dartos muscle weakening. Men with an overactive retractile dartos muscle before surgery often achieved dramatic lengthening after surgery (Figure 9, upper right).

Penis stability after the suspensory ligament release appears to be maintained by the buttressing effect of the gracilis muscle and the wound scar. The scar collagen probably reorients itself and provides ligament-like support, but at a new further distance from the symphysis.

Trying to increase penis length radically by totally detaching all its bony supporting connections and then advancing it along the symphysis has been attempted (15). Attenuation and/or compression of the neurovascular bundles resulted in a high incidence of penis necrosis. Most surgeons have abandoned this technique in favour of the simpler and less risky suspensory ligament release.

"Many male patients have a tendency to be aggressive and



Figure 11) Postoperative gain using the stretch test (n=41). Mean follow-up was 10 months, range six to 18. Mean gain was 3.2 cm, range 0.5 to 6.0 cm

will try to dominate the doctor-patient relationship. In addition, men are less likely to follow postsurgical instructions than women. Generally, more postoperative visits are required to preserve a good doctor-patient relationship; male patients usually need a great deal of reassurance" (36) – this statement about the male rhinoplasty patient is even more applicable to the penis lengthening candidate. There appears to be a direct correlation between machismo and the complication rate. Surgeons who are unprepared to make the extra effort, in both patient selection and follow-up, should be reminded of the fate of Dr Vaquez Anon (37).

Psychological erectile dysfunction is a common occurrence after penis surgery. Urologists are familiar with this problem, and it has been reported by plastic surgeons (38). Assuring men that this is usually transient, along with a urological referral for Doppler flow studies and nocturnal penile tumescence recordings to rule out organic causes, comprise appropriate treatment.

Most patients were concerned only about the length of their penis. Some, however, wanted to increase both the length and the girth. It was felt that combining ligament release and grafting (fat injection or dermal-fat inlays) would be hazardous. As such, none had simultaneous procedures.

Standardized penis measurements and the appropriate timing of these measurements are necessary for any valid assessment. It is the author's opinion that gains measured at surgery are inaccurate because some degree of retraction occurs postoperation in all patients. Prolonged traction after surgery is needed to overcome these forces. Only when full healing has occurred are the measurements truly accurate.

Currently, there is no universally acceptable penis measuring technique or device. Penis size is difficult to measure, and measuring techniques are not well documented. Not only are there racial differences (39), there are also differences within these groups (40). There is also intraindividual differences from the flaccid to the erect state. The flaccid penis is what is most often observed (especially in the locker room). Increasing the flaccid length is what most patients want.

To measure the flaccid penis, the stretch technique and a standard ruler were used in this study. The technique is sim-

ple, negates any dartos effect and is well tolerated by the patient.

Although the average gain of 3.2 cm for the 41 patients with sufficient follow-up was modest, with further refinements in technique it may be possible to increase this amount slightly. The technique is limited by patient anatomy and compliance, and postoperative healing forces are not totally controllable. Patients should not be promised any specific increase and those with unrealistic expectations should be counselled or refused.

A small penis can profoundly affect the quality of life for many men. A surgical procedure, which by changing the

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body can improve one's self-esteem, is the essence of plastic surgery. Penis lengthening should be given serious consideration as one such procedure.

CONCLUSIONS

Penis lengthening can be obtained by suspensory ligament release, gracilis plication and postoperative traction. The esthetic result is superior if the pubic skin is not advanced onto the new shaft.

This new cosmetic procedure has the potential to benefit many men. It should be approached on a peer-reviewed basis and not marketed as a guaranteed quick fix for insecure men.

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