Vaseline injection, an inadequate method for penile augmentation

PhD Thesis

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Szeged, 2014

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Szeged, Hungary

2014

List of publications related to the subject of the Thesis

Full lenght papers

I. *Rosecker Ágnes, Bordás Noémi, Pajor László, Bajory Zoltán*
Hungarian"Jailhouse Rock":Incidence and Morbidity of Vaseline Self-Injection of the Penis
J Sex Med. 2013; 10(2):509-15

IF: 3.523 (2012)

II. *Bajory Zoltán, Mohos Gábor, Rosecker Ágnes, Bordás Noémi, Pajor László*
Surgical Solutions for the Complications of the Vaseline Self-Injection of the Penis
J Sex Med. 2013; 10(4):1170-7

IF: 3.523 (2012)

III. *Rosecker Ágnes, Pajor László, Bajory Zoltán*
A vazelin pénisz incidenciája és morbiditása
Magyar Urol. 2012; 24(2): 58-63

IV. *Dr. Ágnes Rosecker, Dr. László Pajor, Dr. Zoltán Bajory*
From body piercing to vaseline. Self-injuries of the penis.
European Urology Today. 2013; 25(3): 26

Published abstracts
V. *Rosecker Ágnes, Bajory Zoltán, Pajor László*
A vazelin öninjekciózás incidenciája és szövődményrátája
Magyar Urol. 2011; 23(3):138

Poster

VI. Rosecker Ágnes, Pajor László, Bajory Zoltán
A vazelin pénisz végleges gyógyítása többlépcsős műtéttel
MUT XVIII. Kongresszus, Eger 2013.10.24.-26.

Publications not directly related to the Ph.D. Thesis

Full lenght papers

VII. *Bajory Zoltán, Rosecker Ágnes, Pajor László*
Húgycsőszűkület diódalézer-kezelése
Magyar Urol. 2010; 22(4): 186-191

Published abstracts

VIII. *Rosecker Ágnes, Pintér Olivér, Szalay István, Bajory Zoltán, Papos István, Molnár Sándor, Őry-Tóth Csaba, Deák Gábor, Király István, Fekete Zoltán, Pajor Lászó*
A mellékvese daganatos érintettsége vesetumor esetén
Magyar Urol. 2012; 24(3): 133

IX. *Molnár Sándor, Pintér Olivér, Papos István, Őry-Tóth Csaba, Bajory Zoltán, Szalay István, Deák Gábor, Király István, Fekete Zoltán, Rosecker Ágnes, Sükösd Farkas, Pajor László*
Radikális prostatectomiát követő margin pozitivitás jelentősége, országos felmérés
Magyar Urol. 2012; 24(3): 130

X. *Papos István, Rosecker Ágnes, Pajor László*
A műtét előtti vizsgálatok diagnosztikus értéke radikális cystectomia esetén
Magyar Urol. 2010; 22(10): 149

XI. *Bajory Zoltán, Rosecker Ágnes, Király István, Deák Gábor, Molnár Sándor, Őry-Tóth Csaba, Papos István, Szalay István, Fekete Zoltán, Pajor László*
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Posters

XII. Horváth Zoltán, Rosecker Ágnes, Hála Ottó, Varró András
Effect of the inhibition of the IKur on the action potential shape in isolated human, dog and rabbit atrial preparations
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MUT XVIII. Kongresszus, Eger 2013.10.24.-26.

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Introduction

Historical overview

Since time immemorial, men experiment with the increasing the size of the penis. The penis is the symbol of masculinity, fertility and power (Kadouch et al., 2012), so no wonder that people have tried to extend it in various ways. In some subcultures the habit of self-harm of the penis for augmentation is widespread today, too.

Inserted foreign bodies in the penis has been known for long in several cultures. The first archaeological finds, that suggest surgical intervention to ornament the penis, are from the late Paleolithic age (12 700 years) (Angulo et al., 2011). The first written reference to enhance sexual pleasure and to increase the size of the penis was in the Kama Sutra. Small round objects were placed under the skin of the penis, or were decorated on it. (Stankov et al., 2009) Drilling through penis was widespread with the Romans, also. They put wood, metal and bone into it (Józsa, 2011).

The other interventions of sexuality, which were not for enhancing, but inhibitory processes, are also as old as mankind. However, the interventions impeding erection were carried out mostly by doctors. The infibulation was a procedure in which the foreskin was pulled down to the end of the penis, holes were punched into it in many places, then a metal wire was pulled in it after the scarring, and the ends were colligated. These chastity belts were pin or ring-shaped and their bearer could get rid of it only with medical help. The first written record comes from the Roman Aulus Cornelius Celsus 25 B.C. In ancient times young singer boys had it to slow sexual maturation so that their voice didn’t mutated, and it was common among the harp artists and actors who wore the ring as jewelry hanging out fromtheir garment. Later, from the eighteenth to the beginning of the twentieth century it served to prevent masturbation and it was connected with the misbelief of masturbation causing epilepsy. The infibulation was widespread in Germany and in the U.S. in the nineteenth century and major experts also believed in its efficiency (Schultheiss et al., 2003).

The first strangulation case was published by Gauthier in 1775. Since then, many cases are known where the penis was damaged this way (Gauthier, 1755).

It was about one and a half thousand years ago when the habit of placing tiny jades or metals under the skin of the penis spread from Indochina. The mainly in Slavic and Asian cultures prevalent implants to increase sexuality have already reached the western cultures. The method was probably spread out by the soldiers in World War II, although it is disputed

by some authors (Stankov et al., 2009). The vaseline has been used for penile augmentation or thickening for more than 100 years. The petroleum jelly was first applied by a Viennese surgeon Robert Gersuny after castration in 1899 to replace a young boy's testicles, who lost both of them due to tuberculosis (Glicenstein, 2007).

The normal penis size and the need for augmentation

Many men have a wrong idea about the normal penis size, they are worried that their penis is not big enough and they can not satisfy their partner. The false body image that the penis is smaller than the normal size is a form of small penis syndrome is a form of psychosis, professionals call it dismorphophobia or body dismorphic disorder. The dysmorphophobia can lead to serious psychiatric disorders, erectile dysfunction or social problems (Wylie and Eardley, 2007). The incorrect perception of the size of the penis can develop in childhood. The patients see their penis smaller in comparison to their peers. This complex is later increased by pornography and the Internet, as well. In fact, what is the normal penis size? A few studies have dealt with the measurement of the penis. The opinions differ in the measurement technique. Mondaini and colleagues did not measure the erect penis, only in the form of flaccid and the stretched. (Mondaini et al., 2002). In 1996, Wessels et al compared the penis measurement techniques in their study. They measured the length of the penis from the pubo-penile skin junction to the meatus. They measured the flacid, the stretched and the erectile penis, as well. The average length of flaccid was 8.8 cm, the stretched was 12.4 cm and the erected 12.8 cm. Penis extender surgery is not recommended over flaccid 4 cm and stretched or erected over 7.5 cm (Wessel et al., 1996). Based on several studies according to Wylie and Eardley the average stretched size is between 12-13 cm and the erect lenght is between 14-16 cm. The mean girth is 9-10 cm when flaccid and 12-13 when erected (Wylie and Eardley, 2007).

The treatment can be conservative or surgical. The dysmorphophbia always must be separated from the micropenis when the penis is really small. The non-surgical treatment option is the drug therapy like SSRI and anxiolytics for the patients. The testosterone therapy is recommended only in cases of real micropenis (Wylie and Eardley, 2007). The conservative therapy can be education, self-awareness and psychotherapy or physical treatment. The physical treatment uses vacuum devices, penile extenders and traction devices, penoscrotal and penile rings. (Aghamir et al., 2006; Oderda and Gontero, 2011). These methods are not very effective.

The length of the penis can be increased by pubopelvic liposuction, suspensory ligament dissection and skin flap construction. The thickening of the penis is possible by injecting various substances, such as autologous fat, hyaluronic acid, silicone (Kang et al., 2012). There are men with normal sized penis who wish an enlargement surgery. With these surgeries length can be extended with 1-2 cm and the thickness with 2.5 cm in average. The surgeries may also have a number of complications, penile deformity, penile instability, paradoxical penile shortening, scarring, the development of granule, the migration of the injected material, sexual dysfunction (Vardi et al., 2008).

The classification of foreign materials inserted into the penis

The foreign substances placed into the penis with the intention of enhancing sexual perfomance can be divided into four groups, cases of strangulation, objects shoved into the urethra for the purpose of stiffening and objects or liquid implanted under the skin of the penis to sicken it or for aesthetic aspects.

The frequency of self-injuries of the penis is currently increasing in certain cultures. Practitioners are often faced with complications caused by metals, plastics or semiliquids inserted into the penis. The use of penile nodules and petroleum jelly is mainly widespread in Asia and Eastern Europe, particularly in prisons, whereas body piercing is rather fashionable in Western cultures.

The aim of the use of such penile foreign bodies may be to enhance the sexual performance, to prolong an erection, for sexual curiosity, to achieve erotic or auto-erotic effects, masturbation or contraception or to prevent enuresis (Stankov et al., 2009; van Ophoven and de Kernion, 2000).

Foreign bodies inserted into the urethra

Various objects have been inserted into the urethra for different reasons, like maintaining the erection, sexual curiosity, masturbation and contraception purposes, or to prevent enuresis (van Ophoven et al., 2000). The convicts in prisons insert objects into their penis in the hope of some medical treatment outside the prison. (Mastromichalis et al., 2011). Misinformed children by the Internet experiment (Sinopidis et al., 2012). The patient's age is different, they may be mentally retarded or suffering from mental illness, as well. The foreign bodies known to have been applied for this purpose include glass rods, hooks, knitting needles, pins, pencils, ball pens, pen holders, hairpins, matches, electric wires, vine branches, parts of rubber rings, necklaces, forks, forceps, straws, screws,

pistachio shells, razor blades, a toothbrush, an Allen key, drill bits, eye droppers, pacifiers, etc. (van Ophoven and de Kernion, 2000; Walsh and Moustafa, 2000; Molnár and Szőke, 1973; Sukkarieh et al., 2004; Mitterberger et al., 2009; Brison et al., 2006; Sinopidis et al., 2012). Extreme cases of a 45 cm headless snake (van Ophoven and de Kernion, 2000;) and broken mirror have also been reported (Hwang et al., 2010). The meatus has already been clogged up with chewing gum, dropped in candle wax, inserted beans for contraceptive purpose. (van Ophoven et al., 2000; Molnár et al., 1973). Not only rigid objects can be inserted into the urethra, but some liquid, as well (usually water) for autoerotic purposes, thereby augmenting it; the procedure is called "urethral sounding" (Breyer and Shindel 2012). Those who practice "urethral sounding" belong to high-risk groups (promiscuity), they more often suffer from venereal disease (Rinard et al., 2010). Kokkonouzis et al reported an unusual case, a Bulgarian immigrant filled paraffin in his urethra and lengthened it with a string. Although he deformed his penis significantly he refused any treatment (Kokkonouzis et al., 2008).

Foreign materials inserted into the urethra can give rise to mechanical irritation, inflammation, urethral discharge, ascending urinary tract infections, haematuria, dysuria, painful erections, sepsis or uraemia. The long-term consequences may include a urethral stricture, diverticulum, incontinence or an erectile dysfunction (Stankov et al., 2009; van Ophoven et al., 2000; Walsh et al., 2000; Sukkarieh et al., 2004; Mastromichelis et al., 2011; Sinopidis et al., 2012). To set up a diagnosis a careful medical history record is essential. The patients are often embarrassed by their action, or they are mentally retarded, so a medical history cannot be obtained. If the first health worker has no suspicion of a foreign body in the urethra, by bladder catheterisation it can be easily pushed up to the bladder causing further complications, or the appropriate treatment can be delayed due to the late diagnosis. In some cases radiographicaly visible imaging techniques can help. With this treatment it is important to remove the foreign object as soon as possible, using cystoscopy or open surgery, which can depend on the size and material of the object and on the chance of causing a further effect of the injury. The treatment is mainly endoscopic. Antibiotic therapy is recommended in all cases (Sukkarieh et al., 2004). If the patient can drain the bladder, there is no need to insert catheter (Walsh et al., 2000).

Strangulation

Various items are pulled on the penis that can cause strangulation. They pull metal rings, wedding rings iron sleeves, nuts, pipes, bearings, bicycle parts, all kinds of bottles,

PET bottles, tools, hair or rubber bands, on their penis (van Ophoven and de Kernion, 2000; Ivanovski et al., 2007, Pannek and Martin, 2003). In cases of strangulation the patients often turn to a doctor because they cannot remove the trapped objects from their penis. The success of the treatment depends on the removal of the occlusion device as soon as possible. Unfortunately, patients often wait days, months, or years for seeing the doctor, whereas over 72 hours good result cannot be expected. The patients' age varies between wide limits. Their aim is to achieve an erotic and autoerotic effect, or the extension of their erection (Silberstein et al., 2008). With young children the aim can be the prevention of enuresis (van Ophoven and de Kernion, 2000).

These objects can be made of metal or non-metal. The non-metallic objects can cause more serious injuries, but their removal is easier. The non-metal objects are more flexible, therefore the greater pressure effect on the penis can cause more damage (Silberstein et al., 2008; Mooreville et al., 2011;). Objects pulled onto or wound round the penis can cause mechanical damage. Clamping of the penis causes venous stasis or blockage. As a result of venous stasis, the penis swells and the lymph vessels and arteries may then be blocked, with the consequence of ischaemia or infarction. After several hours, necrosis and gangrene may develop. In some cases, not only the penis, but also the scrotum is ligated (Silberstein et al., 2008). Bhat et al. divided the injuries into 5 groups.

Group 1: edema in the distal area.

Group 2: the injury of the skin and the corpus spongiosum, reduced sensation

Group 3: the injury of the skin and the urethra, loss of distal penile sensation

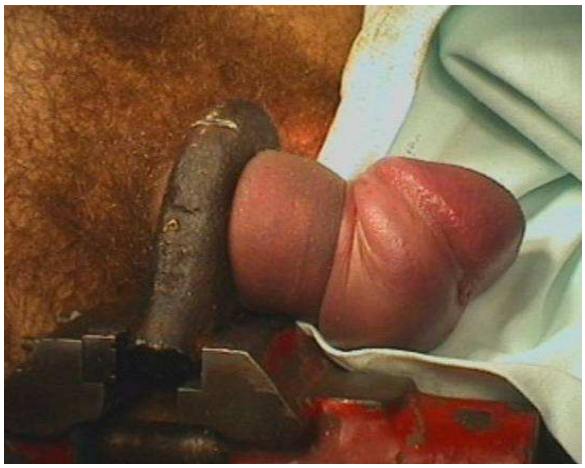
Group 4: the separation of the corpus spongiosum, the constriction of the urethral fistula and the corpus cavernosum, loss of distal penile sensation

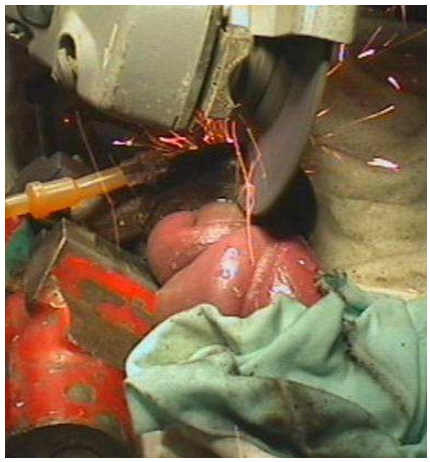
Group 5: gangrene, necrosis, distal or total amputation of the penis (Bhat el al., 1991).

Whereas Silberstein et al. simplified the grouping classifying the injuries as low-grade or high-grade (Silberstein et al., 2008).

The most important task is to remove the foreign body, which can involve serious technical difficulties in the case of metals. The treatment and removal of the device depend on the way and the time of the ram, the patient’s cooperation and on the doctor’s available devices. The degree of vascular injury can be concluded with Colour Doppler ultrasonography after the performed removal of the object. The device causing the tourniquet should be removed as quickly as possible, so as not to cause further injury. Anaesthesia is sometimes needed to remove it. The removing of metal objects may require metal cutting devices. Bolt cutters, electric saws, diamond headed drills, dental drills can be

used (Kang et al., 2002; Lamba et al., 2012; Kelemen et al., 2005; Király et al., 2007) (figure 1.). To avoid further injury it is worth to place a protecting metal object between the clamping device and penis, which can be a laryngoscope cap (Peay et al., 2009), as well and cooling is advisable during the process.


A.


B.


C.


D.

Figure 1. A. Penis incarcerated by an iron ring. **B.** Removal with metal saw. **C.** Penis after the removal. **D.** Control examination, after one week.

Non-invasive removal techniques are also known. Under the clamp object a thread is led and the object is removed from the penis with its help (String techniques) (Noh et al., 2004). The stagnant blood or oedema can be reduced with pressure on the glans, or drained with the help of puncture (Dundee-technique) (Pastides et al., 2011), so the diameter of the penis decreases and the clamp can be pulled off. The two techniques can be combined. The enhanced version is the pseudo-pulley technique; the oedema is drained with the help of e needle and a tourniquet placed on previously prevents the re-formation of oedema. Four needle guide wire is placed under the metal bearing. The tourniquet is removed, the penis is lubricated and with the help of the needle guide wire the bearing is pulled off (Katz et al.,

2012). In rare cases, the damage is so severe that the penis cannot be saved and must be amputated (Ivanovski et al., 2007, Silberstein et al., 2008). After removal of the clamping objects the development of other infections is to be prevented, so patients should receive tetanus and antibiotic prophylaxis. The analysis of the urine and microbiological culturing is essential. Urinary diversion is needed if the patient is unable to urinate, in this case epicystostoma puncture is recommended (Silberstein et al., 2008).

Intim piercings

The spread of tattoo and body piercing has been rapidly increasing in the Western societies over the last 20 years, however, the appropriate professional background is far below the hygienic requirements. The most common type of jewellery is the Prince Albert piercing, which is a ring piercing the ventral side of the penis and urethra as well. The Ampallang piercing drills through the glands and the urethra across, while the Apadravya does it lengthwise touching the urethra, as well. The less popular Frenum is put in the frenulum, while the Dyode drills through the coronaries (Nelius et al., 2011, Anderson et al., 2003).

Figure 2. Piercing Prince Albert

Objects used in modern piercing are made of surgical steel or titanium. Unfortunately, the piercing objects worn by men perforate not only the glans, but additionally the urethra, which can result in serious complications and also change the urinary flow. The piercings are usually implanted in specialized parlors, where the health standards are ensured, but complications may still develop. It is easy to insert the piercing, the location is drawn on the

skin, which is disinfected, and with a pair of pliers the skin is pinched, then it is punctured with an idwelling cannula, and finally the piercing is put in (Anderson et al., 2003).

In several surveys carried out to identify the demographic characteristics, motivations and health problems among males who had resorted to body piercing, the respondents were typically from the younger age group, and the main motivations proved to be sexual stimulation, experimentation and fashion (Rinard et al., 2010; Anderson et al., 2003; Caliendo, 2005; Armstrong et al., 2006 , Skegg et al., 2005). Some publications explain the body piercing with the psychosocial behavior of the patients. The risk taker is typical of these people (Holbrook et al., 2012; Gold et al., 2005; Ekelius et al., 2005, Carroll et al., 2002).

The complications include STDs like condyloma acuminata, chlamidia infection. Further complications can be: molluscum contagiosum, bleeding, inflammation, endocarditis, Fournier gangrene, allergic reactions, urethral stricture, fistulas, scars, keloids, paraphimosis, priapism, squamous cell carcinoma and injuries suffered by the partners (Schultheiss et al., 2003; Gold et al., 2005; Carroll et al., 2002; Skegg et al., 2007; Blake-James et al., 2002; Gokhale et al., 2001; Scholten, 2005; Edlin et al., 2010; Hounsfield and Davies, 2008; Kaatz et al., 2008).

Patients seek medical advice only in severe cases; because the removal of the body jewelry itself can solve their problems. The prevention of complications caused by the piercings should be the patients' education and the provision of professional background in the parlors.

Materials inserted under the skin of the penis

Penile nodules

Nowadays in Asia, Eastern Europe, Argentina and Russia, small balls are inserted under the skin of the penis. The method is particularly popular among prisoners in Indonesian, Thai, Russian prisons, Israel (Russian immigrants), among the people of the Yakuza in Japan and in South California among the Hispanic inmates (Stankov et al., 2009; van Ophoven and Kernion, 2000; Griffith and Horovitz, 2012). The aim of the insertion of the balls is to enhance the sexual pleasure of the partner. Specifically the female parter's joy is wished to be enhanced; it is not spread among homosexuals. The balls are polished of broken glass or plastic to the appropriate size. They can be made of ivory, precious stone, stone, gold, as well. They are referred to with different names such as Bolitas (the Philippines), Chagan balls (Korea), fang muk or Tancho (Thailand) sputnik (Russia)

(Stankov and Ivanovski, 2009, Griffith and Horovitz, 2012). The number and size of the inserted balls can be different, they are usually 1 centimeter. Mostly 2-4, but it can happen that 10 pieces are inserted. The balls are placed underneath the penis skin so, that first marks are engraved with a sharp object and through the small hole the polished plastic balls (maybe from the handle of a toothbrus) are placed in, and using a stick or ball-point pen they are pushed up in the tissues under the skin (Stankov and Ivanovski, 2009).

Gürdal and colleague reported a case in which a stone was found under the patient's penile skin. It was inserted by a doctor in Saud Arabia for penis enlargement. Although the stones did not cause any complications to the patient, the cosmetic result was unacceptable. The patient did not consent to treatment (Gürdal et al., 2002).

Complications often develop. If they do not cause a problem, the wearer rarely turn to a doctor. Many times the patients remove the bullets themselves. The complications can be mostly bleedings, inflammation, and formation of a granuloma, ulceration, abscess, or a bruise in the partner’s vagina. Some people inject vaseline beside the balls into their penis for the purpose of magnification. The treatment consists of the surgical removal of the bullets and conservative local treatment, which usually results a complete recovery (Hsu, 2004; Djajakusumat and Meheus, 2000; Cohen and Kim, 1982; Fischer et al., 2010; Hudak et al., 2012; Lim et al., 1986; Levy et al., 2008; Hull and Budiharsana, 2001; Jaiswal, 1992; Silberstein et al., 2008).

Figure 3. The patient has inserted vaseline and penile nodules under the skin of the penis

Figure 4. The removed nodules

Figure 5. After the operation

Penis enlargement, vaseline and other materials

Liquid or semi-liquid material is injected under the skin of the penis for the sake of augmentation. Such materials are petroleum jelly, silicone, paraffin, formalin and alcohol, mineral oil, metallic mercury, transmission fluid, autologous fat, methacrylate (Torricelli et al., 2012; Kang et al., 2012).

Kadouch et al distinguished 3 groups of the liquid substances.

1: Absorbing or short-acting agents. They have an impact in a few months. These include collagen and hyaluronic acid.

2: Semipermanent or medium acting fillers. Their effect lasts for 6-12 months. These materials are the hyaluronic acid and the polyvinyl alcohol.

3: Permanent or long term fillers. They cause permanent damage. These are the silicone oil and 4% polyalkylimid (Kadouch et al., 2012).

Penile augmentation with allograft and xenograft materials

Free autologous fat graft can be used to make up tissue. Trockman at al draw attention to the complications of penis thickening by autologous fat injection; it can cause inflammation, fibrosis, cyst formation, ecchymosis. The treatment of complications is usually surgical (Trockman et al., 1994). Kang et al considered the method safe, there were hardly any complications. They followed 52 patients for more than 6 months. The aesthetic and functional results were satisfactory. The average initial thickness of the patients' penis was less than 7.4 cm. The fat was sucked down from the subcutaneous areas in the abdomen and thighs. The cleaned fat was injected right under the skin of the penis. The amount of the injected fat was between 25-49 ml. The obtained average thickness of the penis after the procedure was 9.31 cm (Kang et al., 2012).

In 2006, Perovic et al followed 84 patients who had autologous tissue implant using biodegradable scaffolds for penis augmentation. They obtained fibroblasts by biopsy from the skin of the scrotum. They purified the cells; put them into tissue culture for at least 3 weeks. The tissue culture was put on dry polydactyl glycolic acid scaffold implant. The scaffold was placed between the dartos and Buck's fascia. 80% of the patients were satisfied with the achieved results; an average of 3:15 cm increase in the thickness of the penis. The complication rate was low (Perovic et al., 2006).

Solomon and colleagues reported a great number of complications with the use of allograft. The cellular dermal matrix is used by plastic surgeons for tissue deficits primarily in breast reconstruction surgery. This technique may be used for the thickening of the penis, as well. The allograft is laid on the Buck’s fascia. The graft may come from a living donor or a cadaver. Three types of grafts were compared, but the complications occurred equally with grafts of different materials. They followed their patients for an average of 11.25 months. In 42% of the incidences infection and 6.4% total graft loss occurred. Because of the complications it's a pretty controversial method for penis thickening (Solomon et al., 2013).

Bruno and colleagues reported for penis enlargement in connection with two cases of patients who lost skin becouse of necrosis. They made V-Y plastics AlloDermet (allograft dermal matrix) for penis enlargement. Postoperative dorsal skin necrosis developed. They identified the cause of necrosis it was mainly becouse of the damaged blood vessels by AlloDerm. The penile skin and prepucium is supplied by the inferior external pudendal superficial artery branches, which run bilaterally on the dorsal penile shaft. When these blood vessels get damaged, severe wound healing disturbances occur and reconstruction is

not easy. The treatment was combined with conservative wound care and tried to preserve the remaining viable tissue with debridment as much as possible. The lack was made up by skin graft. The achieved cosmetic result was good (Bruno et al., 2007).

Alei et al used xenografts, porcine dermal acellular graft for penis thickening. They did not have major complication and they achieved approximately 3 cm thickening (Alei et al., 2012).

Hyaluronic acid

Hyaluronic acid is used for the augmentation of the glans. The hyaluronic acid is injected directly in the glans, which is called the “mushroom technique”. The technology comes from Asia; first Professor Sito applied it with bovine collagen. The hyaluronic is more bio-compatible than bovine collagen. 1-2 ml was injected from the sulcus coronary to the glans superficially in every 2 months. Anesthetic lidocaine / prilocaine cream was used to reduce pain. The complications were little; a small amount of bleeding and pain could occur. The patients were satisfied with the results. The glans increased of more than half inches in diameter (Micheels et al., 2012; Kim et al., 2003; Moon et al., 2003).

Methacrylate injection

Torricelli et al reported a case where methacrylate was injected in the penis for augmentation. The patient had his penis injected with methacrylate two years earlier in another private clinic. The patient was dissatisfied because the paste in his penis caused erection, aesthetic problems and pain. Torricelli et al performed a reconstructive surgery, where the skin was removed along with the foreign substance and was replaced by a flap. The histology findings of the removed skin showed fibrosis and foreign body granuloma with amorphous material (Torricelli et al., 2013).

Sao Paulo Salles at al treated their patients in their medical centre for polymethacrylat damage, among which there were patients who had had penis enlargement before. The polymethacrylat was suspended in purified bovine collagen or hyaluronic acid. The patients had complications like necrosis, granuloma formation, chronic inflammatory reaction and infection. If the material is injected too deeply into the arteries or veins embolization may occur. Salles point out that neither the incidence nor the prevalence of the cases is not known. There are no standardized treatment guidelines or principles either; they need to be developed (Salles et al., 2008).

Shaeer and Shaeer reported a case in which polyacrelamide gel was used for the patient's penis enlargement and years later complications developed. The patient had granuloma formation and migration of the foreign material under the skin. The affected skin was separated, which was not easy because the mass stuck to the Buck's fascia, the coprus cavernosums and corpus spongiosum in some places. The material was carefully separated while taking care of the neurovascular bundle. Then wound was closed with the rest of the penis skin in two layers. As a result histology showed chronic inflammation and fibrosis (Shaeer and Shaeer, 2009).

Other fillers

Manny et al in their article write about immigrant to the U.S. from Laos, who injected a suspense called "Super Extenze", this illegal substance contained mineral oil and vitamin E (Manny et al., 2011).

Silicone

Attempts have been made for penis augmentation with silicone for a long time (Arthaud, 1973; Narins and Beer, 2006). The penis augmentation with silicone causes paraffinoma and the same complications as the vaseline (Shamsodini et al., 2012, Silberstein et al., 2008).

Kadouch et al presented 6 of their cases, where the patients appeared several weeks after the action due to severe complications. They injected fluid (silicone oil, polyalkylimide) into their penis or scrotum to enlarge their penis. Several times the procedure was performed by a plastic surgeon or urologist in different countries. On the spot of the intervention inflammation has developed and the patients had high fever. In all cases they performed surgery and applied a broad spectrum antibiotic treatment. The authors considered the only possible solution remove of the inflamed tissue. They do not recommend the filling of genitals with fluids from aesthetic reasons (Kadouch et al., 2012). The silicone filling process for penis augmentation is not safe either. A number of adverse reactions were reported. In a case the biopsy histology record reported verucosus SCC, and then the histological processing of the removed material it turned out that it was a severe inflammation (Magrill et al., 2008). Solving the damage caused by silicone the same surgical techniques are known as for vaseline (Yacobi et al., 2007).

Vaseline

The self-injection of vaseline is still a widely used method of penis thickening in Eastern Europe and Asia, especially among ex-convicts men. It occures sporadically in other parts of the world, due to the immigrants, such as Portugal (Ukrainian immigrants) (Santos et al., 2003), and wisconsin Hmong (an Asian ethnic group) (Zickerman and Ratanawong, 2007).

The most serious complication of penis harming process is maybe the self-injection of vaseline. The heated vaseline (10-80 ml) is injected under the skin of the penis, mostly in poor sanitary conditions by layman inexperienced in health care. The vaseline massaged evenly over the skin of the penis and patient is laid prone for a day so that the vaseline should not flow off the foreskin, because it would cause severe stenosis. The necessary material and equipment (needles, syringes and vaseline) are not expensive and are easily accessible for prisoners, as well. Most often untrained person performs the procedure paying no attention to sterility, and the hygiene requirements are usually ignored. Based on these facts, it is not surprising that the rate of complications is high and severe cases are not uncommon either. The fatty substances injected into the penis (vaseline, paraffin oil, silicone) result granulomatous foreign body reaction in the damaged tissue. The consequences of foreign body reaction can be the acute inflammation and then after a few months chronic inflammation the fibrosis and the microcirculatory disturbances occure in the affected skin. Histologically the damage is a sclerosing lipogranuloma (Santos et al., 2003; Steffens et al., 2000; Cohen et al., 2001; Kelemen et al., 2006; Carlson, 1968; Nakamura et al., 1985; Imbert et al., 2010; Soyer et al; 1988). The early reaction is that the penis swells; the skin becomes red, hot and painful. The patients can have fever then ulcers, abscesses and fistulas may develop. After the acute symptoms complications may develop such as phimosis, urinating difficulty, scarring, chronic ulcers, skin necrosis, gangrene and erectile dysfunction (Santos et al., 2003; Carlson, 1968). The complications rarely evolve immediately, but after months or years later The self-injection of vaseline is made by the patients to emphasize their masculinity, but instead of the desired effect often complications ensue. Patients often cannot tell what they did when they see the doctor so the diagnosis is late or unnecessary imaging tests are made. A Laotian immigrant was treated with steroids, because the lesion lichen sclerosus et atrophicus was diagnosed (Manny et al., 2011). As a differential diagnosis primarily a sexual disease (lymphogranuloma venerum), tuberculosis,

and tumors must be distinguished (Sejben et al., 2012; Ko et al., 2004). As the process is illegal and causes unpleasant situations or complications and the reconstructive surgery is expensive, they try to hide both the proceedings and the complications. The population in question rarely seeks for help, therefore there are no adequate literature data about the incidence and the frequency of complications of vaseline self-injection. There are only a few publications in the literature, which are mostly case reports focusing on the surgical procedures and complications (Tóth et al., 1984; May and Pickering, 1956; Wiwanitkit, 2004; Pehlivanov et al., 2008; Al-Ansari et al; 2010 ; Karakan et al., 2012; Torricelli et al., 2013). The treatment is surgical, as conservative treatment is not a permanent solution.

Treatment

Akkus et al in a case tried intralesional steroid injections and warm bath because the patient refused the surgery. The therapy was not successful (Akkus et al., 2006, Rosenberg et al., 2007).

The removin of the vaseline is only possible together with the affected skin. In all the cases, early surgical reconstruction brings healing. The damaged areas should be cut out and a plastic replacement is needed (Rosenberg et al., 2007, Nyirády et al., 2008; Bayraktar and Basar, 2012). Different surgical techniques were described, ranging from simple excision of the granuloma to a difficult two-stage surgery when the penis was implanted into the scrotum. The skin coverage technics are the scrotal flaps, inguinal flaps, free flaps, or split-thickness skin grafts (Santucci et al., 2000).

Lee et al dealt with the branches of the vessels nourishing the scrotal skin, but they did not mention the precise technique for identification of the scrotal vascularity (Lee et al., 1994).

Steffens et al emphasize the radical removal of the granuloma vaseline and at the same time the organ-sparing surgery, as well). Five cases were operated who were Russian immigrants because of vaseline granulomas. One-stage operation was carried out with mesh-graft transplantation to replace excised defects. In the case of larger skin deficits two-stage surgery was made. The naked penis was placed under the skin of the scrotum for three months. The tension of the penile skin was released by dorsal slit incision. The skin defects of the penis were covered with meshed grafts (Steffens et al., 2000).

The two-staged surgical techniue of the scrotal tunnel flap: the damaged skin and the subcutaeous tissue are removed to the Buck’s fascia. A vertical incision is made at the down part of the scrotum and a subcutanous scrotal tunnel should be developped. The subcoronal

penile skin must be fixed to the edges of the distal scrotal tunel. The incision at the base of the penis should be closed with interrupted suture. Then in 3 months the penis should be taken out by linear incision or W-shaped flaps or Z-plasty (Parnitvidikun, 2007).

The restoration of the skin can be carried out by bilateral scrotal flaps, as well (Santucci et al., 2000; Jung et al 2012).The damaged skin should be removed, but the neurovascular bundle and the Buck's fascia must be preserved. Then the flaps should be lifted with the Dartos fascia. To ensure the bleeding control is very important. Only a Z-plasty is made in the ventral suture line and a new penoscrotal junction should be created. So the penile shaft will look shorter (Jindarak et al., 2005). Shin and colleagues developed a new technique for replacing the penile skin: the T-style anastomosis with bilateral scrotal flaps. Skin affected by paraffin is entirely removed. The bilateral scrotal flaps are dorsally-stitched together and to the corona glandis. the shaft skin is replace also from skin of the scrotum ventrally. An inverted V-shaped incision is made in the scrotum and then the skin is sewn together on opposite sides, thus increasing the size. The lack of skin is perfectly covered (Shin et al., 2013).

The epidemiology of vaseline in and outside prisons in Hungary

The self-injection of vaseline is spread 80% among jailbird or men with such connections, most of them are of roma origin in Hungary, as well. From the 1900's onward the penis enlargement with petroleum jelly and paraffin oil as a drug appeared in Hungary, too. Several publications have appeared on the subject (Benedek, 1913; Tóth et al., 1984; Nyirády et al., 2008; Sejben et al., 2012). In 1984, Tóth et al reported a multistage reconstructive surgery in a patient who has come forward due to a damage suffered as a result of paraffin oil.

In 2006, Kelemen and his colleagues present the case of 16 patients, and show the harmful consequences of the injection of petroleum jelly. In their work, they give a detailed description of the surgical reconstruction options. Their patients reported that complications after the injection of petroleum jelly do not always occur. In case of early complications only major complaints make the patients see the doctor, they try to keep the Vaseline injection secret. They try to help themselves with cold compress and antibiotics or squeeze out the developed pus from their penis. Unfortunately, not only in prisons but also in tattoo parlours penis enlargements with petroleum jelly are carried out (Kelemen et al., 2006).

Non-invasive methods of penis lengthening

Vacuum device

The vacuum therapy is used to treat erectile dysfunction. Aghamir et al examined the effect of vacuum therapy penis extender. In their study they involved healthy, sexually active men who were are unhappy with their penis size. They treated their patients with the vacuum three times a week for 20 minutes in a 6 months long period. Although the vacuum treatment did not cause any significant increase of the penis, some patients had psychological satisfaction (Aghamir et al., 2006, Chung and Brock, 2013; Oderda and Gontero, 2011).

Penile traction therapy

The only effective non-surgical method of penis enlargement is the penile-extender device. The stretching of the penis with an extender device is also used for the treatment of Peyronie' disease and it is applied for magnifying the penis, as well. It is a relatively effective method and does not involve side effects. The patients tolerate it well and they are satisfied with the results. The device consists of a plastic ring, into which the penis is fixed; the glans is held by a silicone band. In between the two a dynamic metallic rod does the pulling. The patients a wear tool 4-9 hours a day for months, at least 6 months. Volume and time of the drawing will be gradually raised. The device exerts a progressive mechanical traction. The results hardly exceed 1.5 cm, but the patients are still satisfied, they tolerate the procedure easily and side effects hardly occur (Mondaini et al., 2002, Gontero et al., 2009; 2009; Nikoobakht et al., 2011).

Invasive procedures to increase the penis

Extending with rib cartilage

The dissasembly technique is used for correction of congenital or acquired penile malformations (Perovic et al, 1998, 1999; Bajory et al, 2003, 2012; Király et al, 2008; Szalay et al, 2010) and from the man into woman gender reassignment surgeries (Perovic et al, 2000; Pajor et al, 2002). Perovic and Djordjevic used the dissasembly technique in combination with rib cartilage implantation to increase the penis length. The surgery was done to patients who were dissatisfied with their penis size. Their erectile penis was originally 6-10 cm. The surgical technique is that the penis is separated into anatomical

units, sparing the neurovascular bundle. The urethra dissected from the corpora caversosas. Then the glans is also separated together with the neurovascular bundle. A gap arises between the glans and the corpora cavernosa where the rib cartilage is inserted. The good blood supply of the subcutaneous tissue of the penis nourishes the rib cartilage so that it remains viable. The possible increase is limited by the urethral length and flexibility of the neurovascular bundle the. Perovic and colleagues were able to extend the penis with 2-4 cm, which the patients were satisfied with (Perovic and Djordjevic, 2000).

Phalloplasty augmentation with bilateral saphena grafts

Austoni and Cazzaniga increase the volume of the corpus cavernosums with their surgical technology during erection. The diameter of the penis grows of 4.2 cm on average during erection. With this technique, they increase the tunica albuginea with the help of the saphena graft and through this the diameters of the corpus cavernosums grow. They make a sub-coronal incision on the penis, then separate the tissues from Buck's fascia skeletonising it. They make a bilateral longitudinal incision on the Buck's fascia from the apex of the corpora cavernosa to the root of the penis, carefully sparing the neurovascular bundle. So as to measure the required size of the graft an artificial erection is established. The graft was obtained from the vein saphena. Then they incise the tunic albuginea and sew the saphena patch onto it. They have operated 39 patients with success and major postoperative complications have not occured (Austoni and Cazzaniga, 2002).

Suprapubic dermatolipectomy with liposuction

Many obese patients’ penis disappears under the pubic skin fat or sag in the scrotum. The excess fat is eliminates with plastic surgery (liposuction, lipectomy), the so that the penis seems larger (Alter et al., 2011; Alter, 2012).

Penile suspensory ligament division

Chi-Ying Li and colleagues reported the results of 42 patients, where they achieved a penile augmentation by suspensory ligament division. The method itself can produce a 1.3-2 cm growth and the patients were not satisfied. It was often accompanied by other penis enlargement methods. The function of the suspensory ligament is the stabilizing of the penis, by cutting it an optic gain can be achieved. During the surgery, the suspensory ligamentet is separated from the pubic bone. In the resulting gap silicone prosthesis is placed

(small testicular prosthesis). 35% of the patients were satisfied with the results; almost 50% of them underwent another enlargement surgery later. Abnormal wound healing occurred by 5 patients in the postoperative period, which healed due to conservative therapy. Li et al recommend the surgical methods of penis enlargement as a final solution only in patients with dysmorphoby who understand that the achievable results are limited (Li et al., 2006).

The aim of the thesis

Our aim was to investigate a special case of self-harm of the penis. Then we studied the convicts' vaseline self-injection, and our patients who had reconstructive surgery as a result of the suffered damage.

We explored the complications caused by self-injection of vaseline, the motivation, the epidemiology in a sub-culture in Hungary. In addition, we explored the foreign objects inserted into the penis, the self-harm procedures and typical populations and countries, where it has spread.

Methods

Our cohort

At the Department of Urology University of Szeged there were 78 patients operated due to damage developed by self-injection of vaseline between 2006 and 2012. A prospective study followed the patients. We assessed the circumstances of vaseline self-injection; we asked the amount of the injected vaseline and motivation. The patients were divided into three groups (**A, B, C**) based on the severity of complications and the types of the applied surgery.

The group **A** patients (N=40) had only aesthetic problems or acquired phimosis. They underwent circumcision or the local excision of vaseline granulomas, followed by primary closure of the incision or use of a small pedicled scrotal island-flap (figure 5). This flap is practically a part of a pedicled scrotal flap previously described by Yachia (Yachia, 1986).

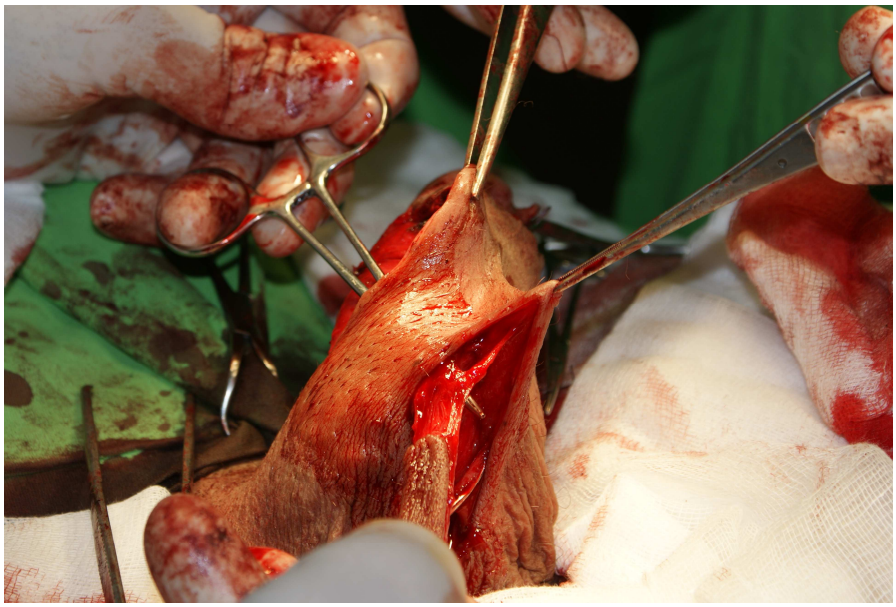


Figure 6. The pedicled island flap is pulled up to the dorsal surface of the penis through a subcutaneous tunnel.

Figure 7. The penile skin defect is replaced.

In group **B** (N=32), the patients had complications such as vaseline granulomas, ulcers, and necrosis, which were localized on the penile skin and did not involve the scrotum. The affected penile skin was removed in these cases by degloving of the penis, performed from the distal to the proximal direction, over the cavernosal bodies, the dorsal neurovascular bundle, and the urethra. Scrotal skin flaps were used to reconstruct the penile skin. In the initial cases (B/1, N=20), the penis without its skin layer was buried in a tunnel under the

tunica dartos of the scrotum, as described in the previous literature (Yachia, 1986), where the tunnel is as long as the length of the stretched penis (figure 8).

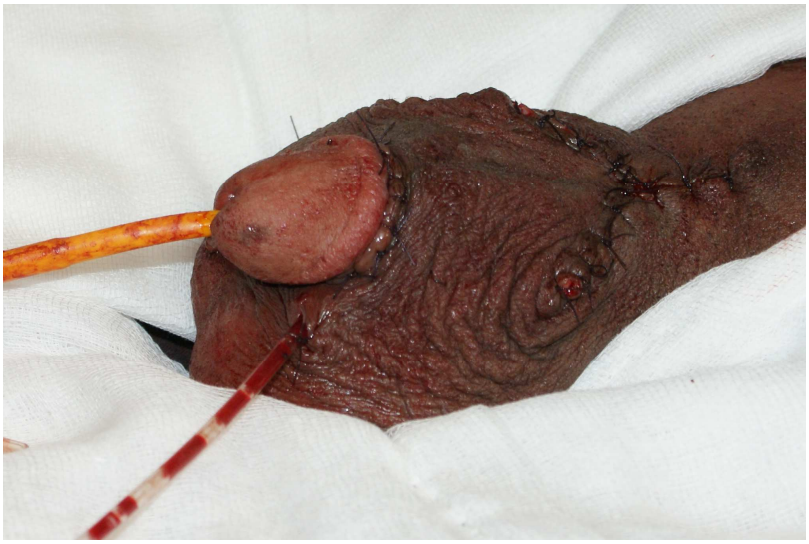


Figure 8. The degloved penis is placed in a tunnel under the tunica dartos of the scrotum.

Three to five months after the surgery, when the new blood supply had formed, the penis was liberated, together with the surrounding scrotal skin. Tension-free closure of the wound was performed on the ventral part of the penis and the skin was closed above the testicles too. When we had acquired more experience, a new modification of a previously described (Yachia, 1986) one-step reconstructive surgery (B/2, N=12) was developed. The penile skin was removed in the same manner. The dorsal side of the scrotum was opened along the raphe. The two scrotal-skin flaps were transluminated from the outside to the inside. This technique helps the surgeon visualize the anterior scrotal branches of the deep external pudendal artery and the posterior scrotal branches of the internal pudendal artery (figure 9). This kind of skin incision secures the anatomical structures without compromising the vascularity to minimize the postoperative necrosis of the edges of the skin. The bilateral scrotal flaps nourished by intact arterial branches were elevated and joined to the residual inner layer of the prepuce around the penile shaft and to each other on the dorsal surface of the penis with simple interrupted sutures.

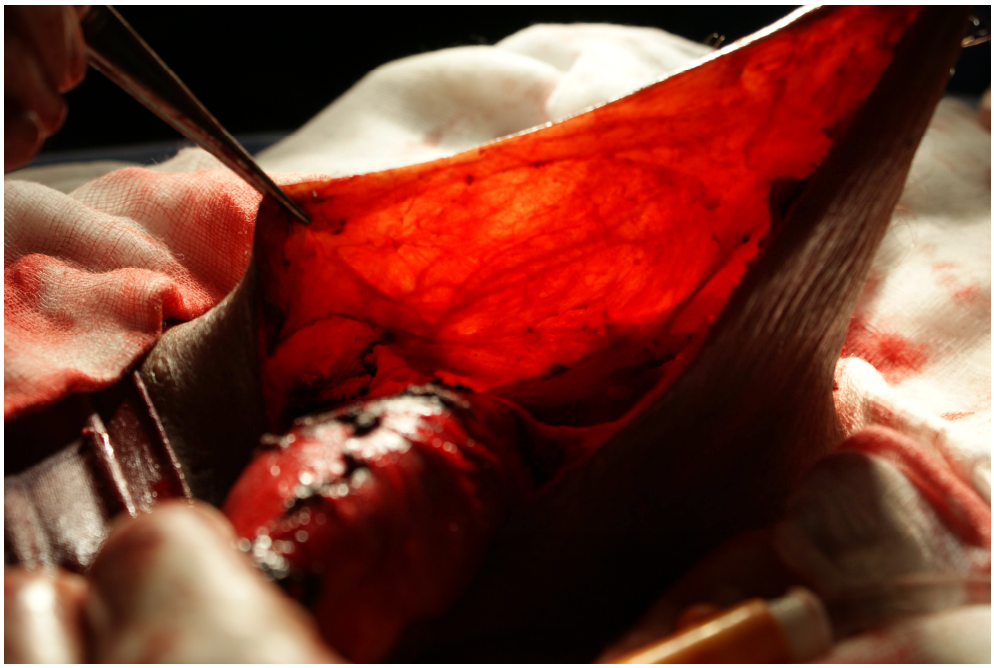


Figure 9. The scrotal-skin flap is transluminated. The anterior scrotal branches of the deep external pudendal artery and the posterior scrotal branches of the internal pudendal artery are visualized.

The created skin flaps sometimes cannot cover the whole ventral-distal shaft of the penis in a tension-free manner and a triangular area remains naked. This area is covered by the inner layer of the prepuce, which is usually not affected by the Vaseline self-injection. This part of the prepuce was dissected dorsally, the bilateral inner layer of the prepuce was turned and pulled gently to a ventral position, and the flaps were sutured in the midline If the patient had been circumcised previously or insufficient remaining intact prepuce was not available, a small split-thickness skin graft was used to cover this skin defect.

In group **C** (N=6), the patients exhibited vaseline granulomas in both the penile and the scrotal skin. In these cases, the complete penile skin and a significant part of the scrotal skin were removed during the surgery. The penis was covered by the rest of the vaseline-free scrotum. Since no scrotal skin remained available to cover the testicles, bilateral skin flaps from the femoral regions were elevated and transpositioned medially to cover the testicles (Figure 10, 17). The patients were continuously monitored, and detailed physical examinations were made 1 and 3 months postoperatively. The patients were asked about the level of their satisfaction and their postsurgical sexual life. The duration of hospitalization was considered, and the removed skin was subjected to histological analysis.

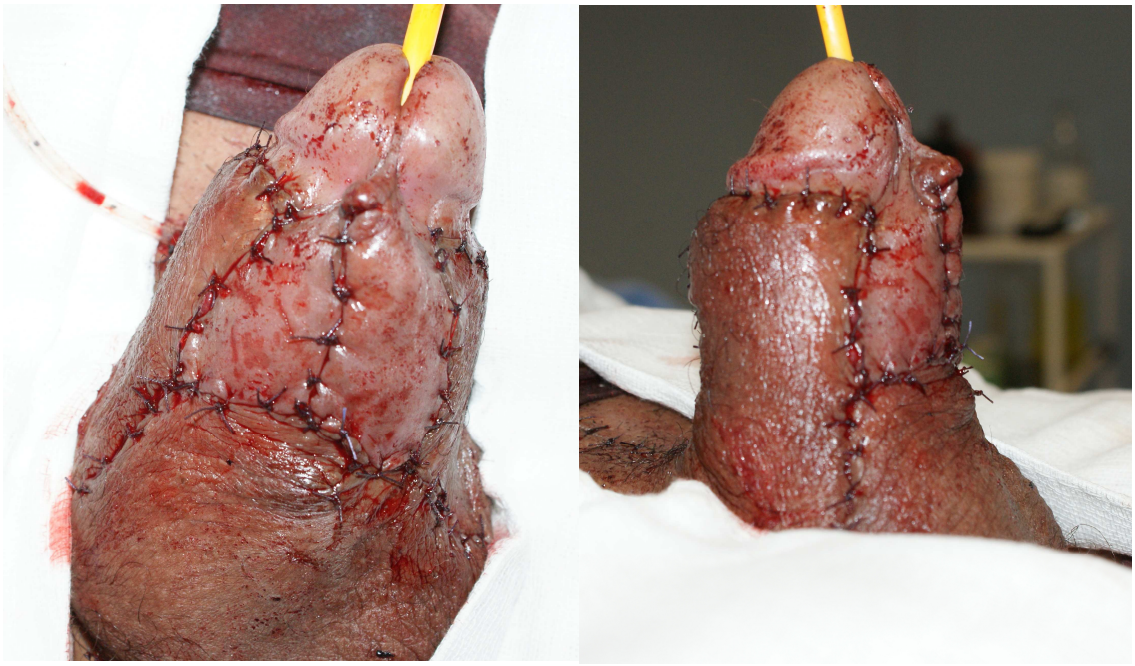


Figure 10. Lateral and ventral aspects. The scrotal flaps are positioned and joined on the dorsal surface of the penis and the incision under the coronal sulcus is also closed. The bilateral prepuce flaps help to cover a triangular area on the distal part of the ventral surface. The proximal part of the ventral surface is covered by the pulled-up scrotum.

Questionnaire survey in prisons

This study involves a planned analysis of the incidence and morbidity of vaseline self-injection among inmates of the six largest and strictest prisons in Hungary (located in Budapest, Szeged, Vác, Márianostra, Sátoraljaujhely, and Sopronkőhida), through the use of a well-structured questionnaire. The results were analyzed statistically in order to assess the incidence of use of vaseline self-injection, the motivations, the complications, the level of satisfaction, and the development of any sexual distress in this population. In 2010, with the permission of the Hungarian Prison Service Headquarters, informative lectures were given to the inmates in the above mentioned six Hungarian prisons, and a 17-point questionnaire was then distributed to 4,735 inmates. No inmates were excluded from the study. Those willing to participate gave their signed informed consent and completed the questionnaires alone. The questionnaires were collected anonymously, and returned to us by mail. A total of 1,905 inmates agreed to participate in this study and their questionnaires were analyzed statistically. The 17-item questionnaire, structured by the authors, does not generate a numerical score. It had to contain easy questions because of the generally low level of education among this population. Its completion was anonymous and voluntary, without any

engagement. It was designed to assess the incidence of use of vaseline self-injection, the motivations, the complications, the level of satisfaction, the development of any sexual distress, and the appropriate function. The questionnaire asked about the duration of imprisonment („what is the length of your sentence?"), the level of satisfaction (are you satisfied with the size of your penis?", were you satisfied with your sexual life before imprisonment?"), the existence of any erectile dysfunction („have you ever had any erectile dysfunction?"), details connected with vaseline self-injections („has vaseline ever been injected into your penis?,""when was the vaseline injected into your penis?,"„approximately how much vaseline was injected into your penis?," „who recommended you to inject vaseline into your penis?," „do you have any problem with the injected vaseline?"), the levels of satisfaction before and after self-injection („were you satisfied with the size of your penis before the injection?," „were you satisfied with your sexual life before the injection?," „are you satisfied with the size of your penis now, after the injection?," „are you satisfied with the shape of your penis now?"), and complications after the procedure („have you had any erectile dysfunction since the injection?," „do you have any problem with the injected vaseline, such as pain, tightening of the foreskin, wound/ulcer?," „have you regretted the vaseline injection?,""do you plan to ask for surgery to remove vaseline from your penis?")

Dear Sir,
Vaseline self-injection into the skin is a quite common procedure in Hungarian prisons. Mild complications occur after the injection in 60% of the cases, and severe ones in 30%, which may need difficult reconstructive surgery to solve the problem. The more severe later complications are seen by doctors. Please help us with this study and the preventive work at the Department of Urology in Szeged and complete the questionnaire. This is a voluntary questionnaire requiring no names, and the data are handled in total secrecy. There are no disadvantages from answering the questionnaire, but it can help many people in the future.

1. What is the length of your sentence? **less than 5 years** **5–10 years** **more than 10 years**
2. Have you ever had any erectile dysfunction? **Yes** **No**
3. Were you satisfied with your sexual life before imprisonment? **Yes** **No**
4. Has Vaseline ever been injected into your penis? **Yes** **No**

If NO, you need answer only question 5. If YES, please continue answering with question 6.

5. Are you satisfied with the size of your penis? **Yes** **No**
6. When was the Vaseline injected into your penis?

0–6 months ago **6–24 months ago** **more than 24 months ago**

7. Who recommended this procedure?

No one **A sexual partner** **A friend/relative** **Prisoner** **Stranger**

8. Do you have any problem with the injected Vaseline? **Yes** **No**
9. If YES, what is the problem? **pain** **tightening of the foreskin** **wound/ulcer**
10. Were you satisfied with the size of your penis before the injection? **Yes** **No**
11. Were you satisfied with your sexual life before the injection? **Yes** **No**
12. Are you satisfied with the size of your penis now, after the injection? **Yes** **No**
13. Are you satisfied with the shape of your penis now? **Yes** **No**
14. Have you had any erectile dysfunction since the injection? **Yes** **No**
15. Have you regretted the Vaseline injection? **Yes** **No**
16. If YES, do you plan to ask for surgery to remove the Vaseline from your penis? **Yes** **No**
17. Approximately how much Vaseline was injected into your penis?

10 mL **20 mL** **30 mL** **40 mL**

Thank you for your cooperation! After completing it, please put the questionnaire in the collecting box!

Figure 11. Questionare

Statistical analysis

The statistical analysis was carried out by Statistica 7.0 (StatSoft Inc., Tulsa, OK, USA) software. We gave the descriptive statistics of the categorical scale measured data of the questionnaires in one-, two-or multi-way frequency tables and with the calculation of the appropriate percentage value. The statistical comparison of the frequency data were performed using the Pearson's Chi-square test and the Fisher's exact test.

The data measured on a continuous scale and showing normal distribution we presented by each group averages ± in the form of the mean standard error, and these data were evaluated by using vaccine analysis and Newman-Keuls post hoc test.

The deviations were always considered statistically significant in the case of $p<0.05$.

Results

Demographic data

In Hungary 12,000 prisoners are being held. 17.6% of the convicts are 18-24 years old 16.8% are 25-29 years old, 36.3% are 30-39 years old, 21.2% are 40-49 years old and 8.2% are over 50 years of age. As for the level of education, the prisoners' 0.7% is illiterate, 64.8% left primary school, sometimes with only a few classes, and 19.6% finished secondary comprehensive school, 13.6% finished grammar school and 1.3% graduated at college or university. As for their marital status: 54.6% of them are married or have a permanent sexual partner, 8.8% of them are divorced, 0.4% of them are widowed and 36.2% are single (table 1).

Age (years)	%
18-24	17,6
25-29	16,8
30-39	36,3
40-49	21,2
50-	8,2

Education	%
Illiterate	0,7
primary school	64,8
trade school	19,6
secondary school	13,6
Bachelor or master	1,3

Relationship	%
married	15,3
cohabit	39,3
single	36,2
divorced	8,8
widow	0,4

Table 1. The proportion of the survey respondents categorized by the length of their sentence

The Results of the questionnaire survey

Of the 4,735 inmates (40.2%) in the six prisons involved in the study, 1,905 completed the questionnaire (in some cases, not all of the questions were answered). Of the responders, 37.5% (N=714) had received sentences of less than 5 years in prison, 34.8% (N=663) of them 5–10 years, and 16.8% (N=321) of them more than 10 years (table2).

sentences (year)	0-5	5-10	10-
The proportion of the survey respondents (%)	37.5	34.8	16.8
inmates (n=4735)	2368	1752	616
completed the questionnaire (n=1905)	714	663	320
completed the questionnaire (%)	30.2	37.8	52.0
did not complete (%)	69.8	62.2	48.0

Table 2. The proportion of the survey respondents categorized by the length of their sentence

Of the responders, 15.7% (N=299) admitted that they had injected vaseline into their penis (figure12). Of the vaseline users, 40.2% (N=119) had received sentences of less than 5 years in prison, 38.5% (N = 114) of them 5–10 years, and 19.6% (N=58) of them more than 10 years. The proportion of those sentenced to more than 10 years was significantly smaller than that of those sentenced to shorter period ($p<0.05$). The duration of the prison sentence did not influence the rate of vaseline use ($p=0.85$). According to sporadic, verbal information from the inmates, the vaseline injections are performed mostly among new inmates, during the first 3 months of their imprisonment. Of the 299, 8.7% (N=26) had done it within the past 6 months, 15.4% (N=46) of them within the past 6–24 months, and 71.9% (N=215) more than 24 months previously (figure12).

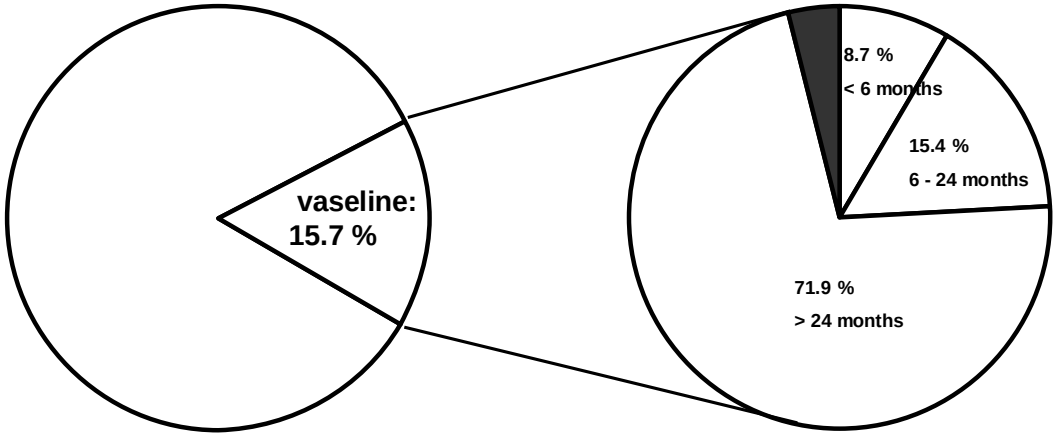


Figure 12. Of the responders, 15.7% (N=299) admitted that they had injected vaseline into their penis. Of the 299, 8.7% (N=26) had done it within the past 6 months, 15.4% (N=46) of them within the past 6–24 months, and 71.9% (N=215) more than 24 months previously

Vaseline injection was recommended by a fellow inmate in 44.1% (N=132) of the cases, a friend/relative in 20.7% (N=62), a stranger in 3.7% (N=11), a sexual partner in 9.7% (N=25), and no one in 18.1% (N=54) (table3).

Recommandation	%	N
prisoner	44,10%	132
friend/relative	20,70%	62
stranger	3,70%	11
nobody	18,10%	54
sexual partner	9,70%	25
Total	96,30%	284

Table 3. Different groups who recommended vaseline self-injection to the respondent subjects

Among the responders who had not performed vaseline self-injection, only 7.6% (N=122) had suffered an erectile dysfunction, 77.9% (N=1246) of them were satisfied with their sexual life, and 75.1% (N=1202) of them were satisfied with the size of their penis.

Of the responders who had carried out vaseline self-injection, 21.1% (N=63) had been dissatisfied with the original size of the penis and 19.0% (N=57) of them had been dissatisfied with their previous sexual life. There were no significant differences (p=0.47) between the two groups from these aspects after vaseline self-injection, 15.1% (N=45) of the subjects were dissatisfied with the size of the penis, 28.8% (N=86) were dissatisfied with the shape of the penis, and a de novo erectile dysfunction had developed in 21.4% (N=64) of them. These data differed significantly (p<0.001) from those relating the responders who had not injected Vaseline into their penis. In the group that had injected Vaseline into the penis, only a slight increase was later experienced as concerns the level of satisfaction with the penile size (p=0.044) (figure 13).

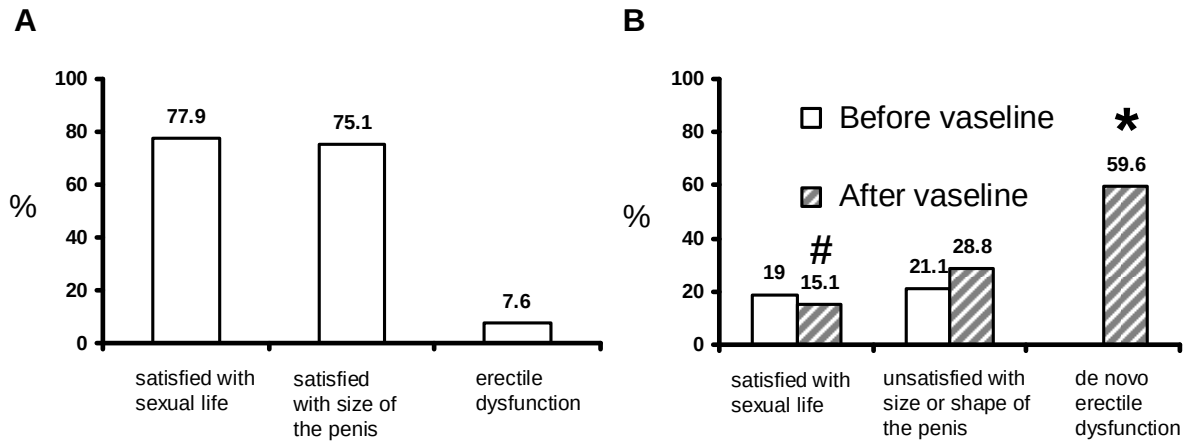


Figure 13. The effect of injecting vaseline on sexual life. A) Those, who do not have vaseline injected, B) Vaseline adopters. The vaseline group 21.4% of cases (N=64), de-novo erectile dysfunction developed. This value was significantly higher (p<0.001, Pearson's χ2-test between the observed and the expected frequencies) compared to the group with no vaseline. Within the group using vaseline there is only a marginal improvement in satisfaction related to penis size, before and after the injection of vaseline. (p=0.044, Pearson's χ2-test)

Of the responders who had self-injected vaseline, 25.4% (N=76) admitted that there was subsequently some kind of abnormality in connection with their penis. In 31.6% (N=24) of them, phimosis had developed, 22.4% (N=17) had pain, and in 52.6% (N=40) a wound or ulcer had emerged (Figure 13).

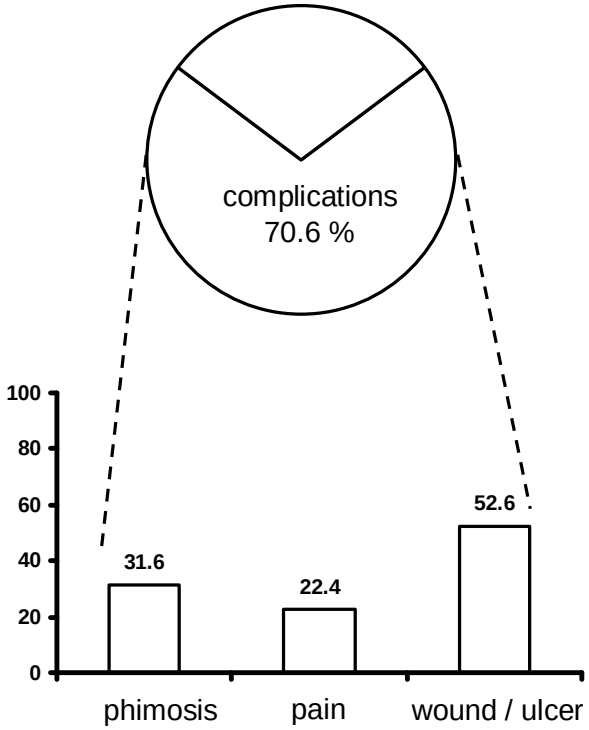


Figure 14. Penile abnormalities in patients with complications of vaseline self-injection

Of the vaseline users, 29.1% (N=87) regretted the self-injection, though the rate among those with complications was 53% (N=35). Who regretted vaseline self-injection, 72.4% (N=63) planned to participate in reconstructive surgery to remove the vaseline.

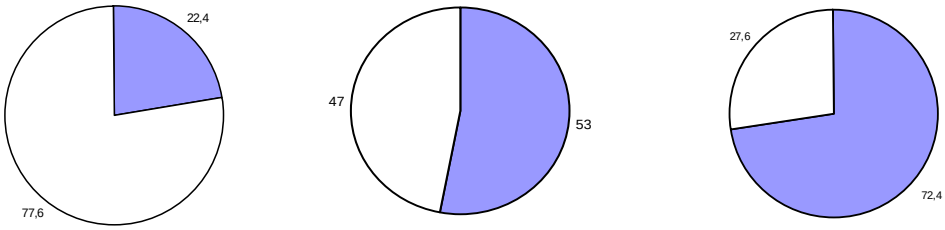


Figure 15. 22.4% of the vaseline users regretted the self-injection, however, the rate among who had complications was 53%. 72.4% of who regretted the vaseline self-injection would undergo a reconstructive surgery to remove vaseline.

The results of the penile reconstruction

Of the 78 patients operated on in our department, 87.2% were previous or present prison inmates. An additional 5.1% of the patients (N=4) admitted that they had not spent any time in prison, but the procedure had been recommended to them by a former inmate. Thus, 92.3% (N=72) of the vaseline users had in some way been in contact with prison life. Sixty-eight (87.2%) of the patients had phimosis, and in 100% of them (N=78), thick, nodular vaseline granulomas had developed in the penis, ulcers occurred on the penile skin in 50% (N=39), and there was extensive necrosis of the penile skin in 20.5% of the patients (N=16).

Group	N	Procedure
A (N=40)	32	Circumcision
	3	Circumcision + local excision
	3	Circumcision + local excision + scrotal island flap
	2	Local excision
B/1 (N=20)	20	Penis buried in the scrotum
B/2 (N=12)	7	One-step pedicled scrotal flaps
	4	One-step pedicled scrotal flaps + rotated prepuce
	1	One-step pedicled scrotal flaps + split-thickness skin graft
C (N=6)	6	Rotated scrotal flaps + transpositioned femoral skin flaps

Table 4. Different types of procedures by groups

In group **A** (N=40), local excision of the granulomaand/or circumcision were performed (Table 4). In most of these cases, total removal of the vaseline was not possible with these limited excisions. Thirty-one patients (77.5%) healed per primam and no postoperative complications occurred. In nine patients (22.5%), there were wound healing complications (probably caused by the residual vaseline in the tissues), which needed local therapy and antibiotics. In group **A**, where the amount of vaseline injected was 10–15 mL (Table 5), 100% of the patients were satisfied with the surgical and aesthetic results and were potent. The duration of hospitalization was 1–3 days (Table 5). In group B, where the amount of vaseline injected into the penis was 20–40 mL (Table 5), total removal of the penile skin was carried out because the self-injection affected the whole of the penile skin. In group B/1, where the penile shaft was buried beneath the dartos of the scrotum (Table 4), no complications were experienced in the early postoperative care following the first or second surgery, but in five cases (25%) postoperative marginal skin necrosis of the scrotal flap placed on the penis occurred 5–7 days after the second operation. In group B/2,

postoperative marginal skin necrosis of the pedicled scrotal flaps developed in three cases (25%) in the first postoperative week. Necrectomy, local therapy, and resuturing of the wound were performed. Areas where there was a lack of skin healed per secundam. In one case (5%) in group B/1, the urethra near to the coronal sulcus suffered an intraoperative injury during the removal of the vaseline granuloma. The injury was treated with interrupted sutures, but these were not effective and a urethral fistula developed on the eighth postoperative day. During the second operation, the penis was separated from the scrotum, the fistula was closed, and the area above the fistula was covered by a split-thickness skin graft to avoid tension in this area. There were no complications after this procedure. In group **B**, 26 patients (81.2%) were satisfied with the surgical results, whereas six patients (18.7%) had aesthetic problems in connection with their penis, but none of them wanted additional surgery. None of them reported an erectile dysfunction. The duration of hospitalization was 5–28 days (Table 5). In group **C**, where the amount of vaseline injected into the penis was 30–50 mL (Table 4), there were no complications of the transpositoned scrotal skin flaps, but all of the femoral flaps covering the testicles shrank. This shrinkage caused only discomfort and mild complaints for the patients. All of the patients were satisfied with the surgical results (Figure16). The duration of hospitalization was 14–20 days (Table 5). Concerning the relationship between the amount of vaseline and the duration of hospitalization, one-way analysis of variance revealed significant differences between all groups (Figure 15).

a: Amount of vaseline injected (ml)

Group	Means	N	Std.Dev.	Std.Err.	Minimum	Maximum
A	11.9	40	2.45	0.39	10	15
B	28.3	32	7.03	1.24	20	40
C	40.8	6	9.17	3.75	30	50

b: duration of hospitalization (days)

Group	Means	N	Std.Dev.	Std.Err.	Minimum	Maximum
A	2.2	40	0.78	0.12	1	3
B	8.7	32	5.44	0.96	4	28

C	15.3	6	2.50	1.02	13	20

Table 5. Descriptive statistics of patients in Group A-C

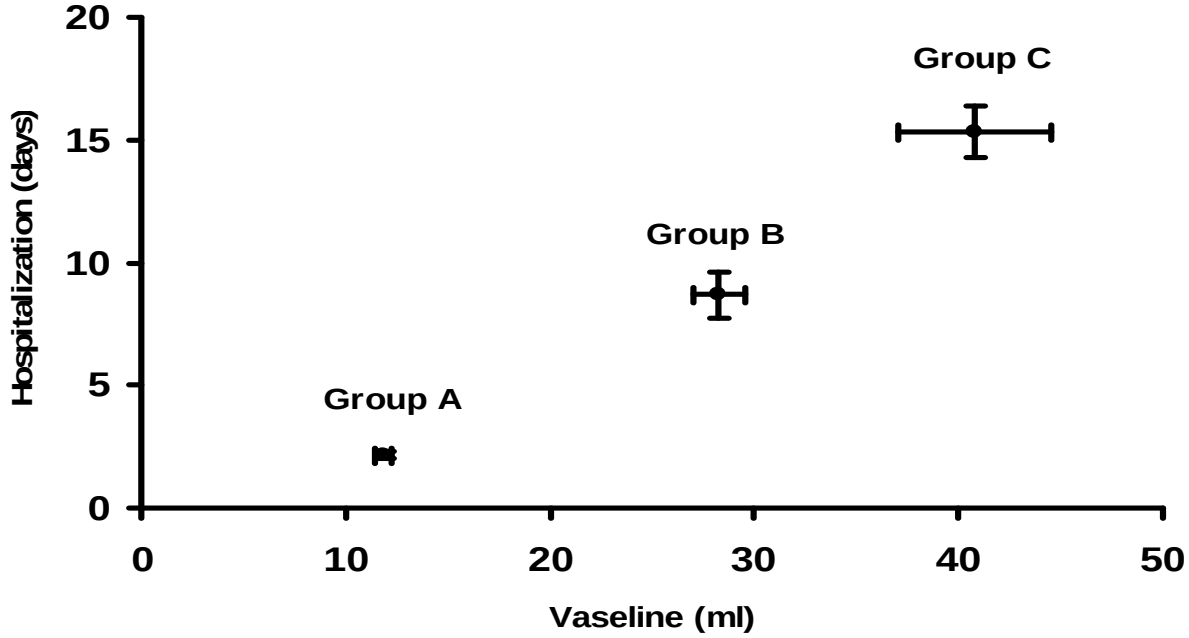


Figure 16. Relationship between the mean amount of vaseline injected and mean duration of hospitalization in Groups A-C. Data are shown as mean ± std. error of mean. Groups were significantly different from each other regarding both parameter ($p<0.05$, ANOVA followed by Newman-Keuls post-hoc test).

Three months after the surgery, 48 patients (61.5%) visited the outpatient department for control examinations. All of them were satisfied with their sexual life and none needed additional surgical correction (Figure 17). The histologic samples revealed chronic inflammation, a large number of foreign body giant cells, lymphocyte and hystiocyte infiltration with fibrosis, surface ulceration or chronic abscesses.

Figure 17. A: The testicles are covered by the femoral transposition flaps. B: Three months postoperatively. The femoral transposition flaps have slightly shrunk, but the patient experienced only discomfort.

Discussion

The practice of placing foreign objects into the penis is as old as mankind, and in some subcultures it has the same popularity today. This practice however, brings the need of treating the defects caused by the foreign objects in the body imposing the burden on health care systems.

There is a growing trend of efforts for a bigger size of the penis these days. Many men underestimate his penis size and would like to extend it surgically. Unfortunately, the media also suggests that the "bigger is better". Thus, men with a normal size penis also submit to an enlargement intervention. Penis enlargement surgery is only recommended in the case of real micro-penis. There are few publications dealing with the indication for surgery and penis measurement techniques. The results differ, dependent on the measurement technique and the measured population. The determination of a normal penis size is not unified either. It is questionable whether a few centimetre increase of the penis size can make the patient satisfied. Those who are young, sexually active, healthy people have actually psychological dysfunction. In addition to surgical procedures, non-surgical and psychological therapies can be used, as well. The penis enlargement techniques may be accepted when cause little complication. Still there are only a few data and only a few patients were followed long-term, thus neither technique can be preferred (Vardi et al., 2008). Spyropoulos and colleagues developed a questionnaire that helped them to select the right patients for their penis enlargement surgery (“Augmnetation Phalloplasty Patient Selection and Satisfaction Inventory/APPSSI”). Though their number of cases is small, the

work calls attention to the fact that the surgical treatment of dysmorphophobia, it would be worthwhile to standardize the pre-operative tests. The patients' sufficient motivation is critical to the successful surgeries. Their patients have undergone not only physical but also psychological examination before the surgery. After the surgeries a few complications occurred, but their patients were satisfied with the results (Spyropoulos et al., 2005). Colombo and Casarico raise the ethical and psychological aspects of surgical penis enlargement. They recommend preoperative urological, psychosexual, psychological and psychiatric examination, where a multi-disciplinary team works together (Colombo and Casarico, 2008).

According to Panfilov, the penis size is not a critical point for women. 90% of the nerve ends at the clitoris and 1 centimetre away from the introitus. The men want to meet the needs of their own not their partners'. They want to increase their self-confidence by turning to a plastic surgeon. They want to draw attention to the fact that the obtained results in centimetr a year after the surgery may even shrink. He recommends the autologous fat instead of the foreign substances for penis filling, which does not cause a foreign body reaction. For men who have larger than normal penis enlargement surgery is not recommend, rather the partner should be sent to a gynaecologist for vagina restriction (Panfilov, 2006).

Due to immigration penile self-harm leads to public health problem not only in Eastern countries, but it spreads in other parts of the world, as well. The patients do not see the physician in time because of shame, or they remove the foreign body themselves. The complications are common, as the foreign object was implanted by themselves or to their fellow by laymen with no medical qualification in not sterile conditions. It is common among convicts, sailors, labourers and soldiers.

The goal of implanting such materials are enhancing sexual pleasure, penis augmentation, bolding and decoration, masturbation, belonging to the same group, as well as symbolizing manliness or potency for some people (Stankov et al., 2009).

Lee et al, examined 26 cases in Korea, and 13 years later they could not found major problems only 7 cases. Lee et al. concluded that the complications developed, on average, approximately 18.5 months after self-injection in the Asian population. Each of our patients reported that they had done it to emphasize their masculinity, but eventually pain and inflammation was the unfortunate outcome rather than the desired effect. Finally, the authors state that this self-destructive process afflits mainly the men of lower social status with low education and there would be a great need for awareness-raising work (Lee et al., 1994).

Nyirady et al on 16 European men who underwent corrective surgery, with accounts of the complications of the self-injection, the times between the self-injection procedures, and the development of complications, the reconstructive surgical techniques applied, and the overall results. In the European study, the authors created three groups (acute, subacute, and chronic), examined the complications of the patients, and provided details of the histological characteristics of the abnormalities (Nyirády et al., 2008).

Moon at al conducted a survey in a Korean prison in 2003. Each of the responders, a total of 357 men, increased the size of his penis with paraffin; of who 48.9% responded that a friend recommended the method. In 78% the procedure was not performed by a doctor. The reason why they embarked on it with 17.2%'s was the feeling of small penis size, with more than 32% was the concern of poor erectile function. But after the filling, only 33% of them got rid of his inferiority complex. 91% of respondents were dissatisfied with his penis afterwards, and 74% wanted to remove the material from his penis. Only 15.6% of them answered that he had no medical problem. The others suffered from various unpleasant complications (inflammation, necrosis, pain). By the psychological evaluation there were no answers that reflected pathological psychiatric differences. Finally, they called for the awareness and prevention work in this severely health damaging problem (Moon et al., 2003).

We determined the incidence of self-injection of vaseline in Hungary’s most affected population among prisoners in our representative study. The satisfaction with the original penis size and the sexual life was almost the same in the group of self-injectors prior to the intervention, similar to the group of non-adopters of petroleum jelly. Among the possible motives there are the false perception of their penis size, the erectile dysfunction, the following of the fellow prisoners’ wrong example and the role of the size of the penis in the prison hierarchy, but the claim of sexual partners was not an important motivation for the intervention. Complications developed by a large number of vaseline injectors.

The vaseline applyers regretted their act and would like to remove the vaseline surgically. The popularity of the intervention in this population can be attributed merely to the poor social conditions and ignorance, since the vast majority of vaseline adopters are not satisfied with the aesthetic results. The severe cases often require complicated, multi-stage reconstructive surgery where we have to reckon with a non-negligible rate of complications. In Hungary the reconstructive surgery is not financed by the social security system, those who wish to heal cannot afford the surgery from their own resources; thus their treatment is delayed or canceled.

In some sub-populations the incidence of vaseline self-injection is higher than in the general population. The main motivation for the intervention is the fellow prisoners' bad example, so the information of these subpopulations about the harmfulness and ineffective nature of vaseline self-injection is of essential importance. Our study of demonstrating the high incidence of complications of the petroleum jelly injection emphasizes the importance of prevention and education programs in order to improve the health and social status of the affected sub-population (Rosecker et al, 2011, 2012, 2013, 2013, 2013; Bajory et al., 2010, 2013).

Summary of new Scientific Results

1. A survey of the incidence of vaseline penis augmentation in Hungarian prisons

Our representative survey on the most affected population, the sentenced prisoners, showed a high incidence of vaseline self-injection. The high incidence and the knowledge of complication rate revealed by our study can contribute to the improving the health level of the affected sub-population. The injection of vaseline is still a prevalent method for the enlargement of the penis in some subpopulations. The procedure is represented of 80% in prison, and spread among men with such connections, which is associated with severe complications. We performed a questionnaire survey based on the answers of 4735 convicts in the six largest and most rigorous prisons in Hungary. 1905 prisoners completed the questionnaire the responses were statistically evaluated 15.7% of the respondents admitted that vaseline was injected into his penis. We learned that the main motivation for choosing it was the bad example of fellow prisoners. It can be clearly seen that among the injectors, even those who have not seen any doctor, there is a high occurrence of complications, and a clear correlation exist between the severity of complications and the amount of vaseline injected. 29.1% of the vaseline adopters regret the injection, the complication rate here is 53%. Among those who have regretted 72.4% underwent surgical intervention to remove the vaseline.

In this large, representative survey of the most affected population, we received a picture of a high incidence of self-injection. We can improve the health of this population concerned with prevention work, and proper information.

2. *The elaboration of a new surgical technique for vaseline penile reconstruction treatment*

On our own patient population, which is the largest published patient population, the complications, surgical solutions, and reconstructive surgery innovation of reconstructive solutions of the vaseline self-injection were reported. 78 patients were operated due to the developped damage of vaseline self-injection between 2006 and 2012 at the Department of Urology in Szeged, and in 20 cases out of the 78 a multi-stage surgery was required.

We divided the patients into three groups (A, B, C) based on the severity of complications and the applied surgery types. Accordingly, they received stage-oriented care. We listed the cases of aesthetic issue or causing phimosis in group A. These patients were treated by circumcision, local excision of the vaseline granuloma and primary wound closure. In some cases, the defect was covered with a pedicle flap of the scrotal skin. In group B the lesions caused by vaseline (granuloma, ulceration, necrosis) were localized under the skin of the penis, but the scrotal skin was intact. In these cases, the affected penile skin was removed, preserving the maximum part of the intact skin. The penis skin was released from distal to proximal direction, above the corpus cavernosum, the dorsal neurovascular bundle and the urethra. The skin replacement was performed with the scrotum skin. In our initial cases, we inserted the bare penis in subcutaneous tunnel formed in the scrotum so that we calibrated the length of the subcutaneous tunnel to the stretched penile body length. After 3-5 months, when the collateral circulation established, the penis, we lifted the penis together with scrotum skin on it. We made the incisions in the scrotum so as we could close the skin on the ventral surface of the penis without tension. Then we also closed remaind scrotal skin over the testes. With the progress of our surgical practice, we performed the scrotal skin replacement in one session, using a new method. We removed the penile skin according to our current practice. Subsequently, we opened the dorsal surface of the scrotum along the raphe and brightly lighted skin flaps. With this method the arteria prudenda externa supplying deep scrotal of the anterior branches of the artery and the back branches of the arteria pudenda interma become well visible. Thus, we could the form sparing incisions of the skin preventing the postoperative necrosis. We collected the scrotal flaps belonging to the frontal supply area of scrotal branches with nodular stitches on the dorsal surface of penis then under the glans we fixed them round, as well along the sulcus

coronarius. The resulting flaps of skin usually can not cover the ventral-distal portion of the penis in a triangular shape without stretching. We covered this area after dorsal plate separation of the inner side of the mostly vaseline intact foreskin, with turning the bilateral internal disk flap into ventral direction and covering with merging in the central line.

We classified cases into group C where the vaseline infiltered scrotal skin beside the penis skin. In these cases we had to remove not only the penis skin, but we had to resect a larger area of the scrotal skin. We carried out the penile skin replacement from the petrolatum intact scrotal skin in the manner already described, but to mask the testes there was no sufficient tissue. The skin covering of balls was carried out by the help of a plastic surgery method using the femoral flaps.

The treatment of complications caused by vaseline is surgical. Conservative therapy does not result a permanent solution. The surgical reconstruction results healing in experienced hands, and the rate of complications is low.

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Acknowledgements

First and foremost I wish to express my gratitude to Prof. Dr. László Pajor and to my urological training tutor Dr. Olivér Pintér for having been given the opportunity and for the ongoing support in my vocational training.

I am particularly grateful to my supervisor, Dr. Zoltán Bajory for his constant help and inspiration.

I would like offer my special thanks for his assistance in doing the statistics to Károly Acsai.

And I am obliged to all my colleagues for their support in everyday work and in the treatment of patients alike.

I thank almighty to my family, without whom I would have never gone this far.

I wish to thank various people for their contribution to this project: to Dr. Antal Kökényesi pi Lieutenant General, National Commander in Chief, who made it possible to carry out our survey, as well as to the commanders of the prisons: Tibor Frank pi Brigadier Senior Counsellor (Budapest Penitentiary and Prison), László Biczó pi Brigadier General (Márianosztra Prison), Tamás Rózsahegyi pi Lieutenant Colonel (Sátoraljaújhely Prison), Dr. Zoltán Pantali pi Brigadier General, Senior Counsellor (Sopronkőhida Prison), Dr. Pál

Kiszely pi Brigadier General, Senior Counsellor (Szeged Prison), Gyula Vatai pi. Colonel. (Váci Prison). I would also like to extend my grateful thanks to the prison employees, who have helped our work.