

Received: 2011.11.08
Accepted: 2012.03.07
Published: 2012.03.26

Authors' Contribution:

- A** Study Design
- B** Data Collection
- C** Statistical Analysis
- D** Data Interpretation
- E** Manuscript Preparation
- F** Literature Search
- G** Funds Collection

Surgical excision of extensive anal condylomata is a safe operation without risk of anal stenosis

Chirurgiczne wycięcie rozległych kłykcin kończystych odbytu jest operacją nie powodującą ryzyka zwężenia odbytu

Konrad Wroński^{A,B,C,D,E,F}, Roman Bocian^{B,F}

Department of General and Vascular Surgery, Mikolaj Pirogow Regional Specialist Hospital, Lodz, Poland (the European Community)

Introduction:

Summary

Anal condylomata acuminata was a well-known disease in ancient times but in recent years there has been a rapidly increasing number of people who suffer from this disease. The main cause of this disease is infection of human papilloma virus (HPV) which occurs through sexual contact.

Currently there are three different ways to treat anal condylomata. Small changes of anal condylomata can be treated with local therapeutic agents, but the best results of treatment of extensive changes are obtained by surgical techniques.

Material/Methods:

The study group consisted of 30 patients with diagnosed extensive anal condylomata who underwent surgery in Mikolaj Pirogow High Specialized Hospital in Lodz. The survey was conducted from 2007 to 2011. Patients had been directed to the surgical ward by general surgeons and practitioners, proctologists and urologists. The diagnosis was made after proctological assessment in the knee-chest position.

Results:

All patients underwent surgery and had complete macroscopic electroexcision of anal condylomata. In the research group there was no mortality. Postoperative complications occurred in 4 (13.3%) patients – postoperative bleeding. Strong pain was present in 14 (46.7%) patients but only in the postoperative period. During postoperative follow-up there was no observed infection in the anal region or recurrence of disease. In the operated group there were no observed cosmetic deformations of the anus and/or the anal canal, narrow anal canal or functional fecal incontinence symptoms.

Conclusions:

Surgical treatment of anal condylomata is an effective and safe method for the patient. In our research there were no serious postoperative complications or recurrence of the disease during the follow-up period.

Key words:

surgery • excision • anal condylomata • anal stenosis • anal stricture

Wstęp:

Streszczenie

Kłykciny kończyste odbytu były już dobrze znaną chorobą w starożytności, ale w ostatnich latach obserwuje się szybki wzrost liczby osób cierpiących na tę chorobę. Główną przyczyną tej choroby jest zakażenie wirusem brodawczaka ludzkiego (HPV), który jest przenoszony podczas kontaktów seksualnych.

Obecnie istnieją trzy różne sposoby leczenia kłykcin kończystych odbytu. Małych rozmiarów kłykciny kończyste odbytu mogą być leczone za pomocą lokalnych środków terapeutycznych, ale w przypadku rozległych zmian najlepsze wyniki leczenia uzyskuje się u chorych po zastosowaniu leczenia chirurgicznego.

Materiał/Metody:

Grupę badaną stanowiło 30 pacjentów z rozpoznanymi rozległymi kłykciami kończystymi odbytu, którzy byli operowani w Wojewódzkim Specjalistycznym Szpitalu im. dra Mikołaja Pirogowa w Łodzi. Badanie przeprowadzono w latach 2007–2011. Pacjenci zostali skierowani do oddziału chirurgicznego przez chirurgów ogólnych i lekarzy rodzinnych, proktologów i urologów. Rozpoznanie choroby następowало po badaniu proktologicznym wykonanym w pozycji kolankowo-łokciowej.

Wyniki:

U wszystkich chorych wykonano operację całkowitego makroskopowego wycięcia kłykcin kończystych odbytu. W badanej grupie nie stwierdzono zgonów. Powikłania pooperacyjne wystąpiły u 4 (13,3%) chorych – krwawienie pooperacyjne. Silny ból po zabiegu operacyjnym był obecny u 14 (46,7%) pacjentów, ale tylko w okresie pooperacyjnym. W trakcie pooperacyjnej obserwacji nie zaobserwowano zakażenia w okolicy odbytu i nawrotu choroby. W operowanej grupie nie obserwowano kosmetycznej deformacji odbytu i/lub kanału odbytu, zwężenia kanału odbytu i funkcjonalnych objawów nietrzymania stolca.

Wnioski:

Chirurgiczne wycięcie kłykcin kończystych odbytu jest skuteczną i bezpieczną metodą leczenia dla pacjenta. W przeprowadzonym badaniu nie stwierdzono poważnych powikłań pooperacyjnych oraz nawrotów choroby w okresie obserwacji.

Słowa kluczowe: chirurgia • wycięcie • kłykciny kończyste odbytu • zwężenie odbytu

Full-text PDF: <http://www.phmd.pl/fulltxt.php?ICID=987538>

Word count: 1310

Tables: 1

Figures: 1

References: 27

Author's address:

Konrad Wroński M.D., Ph.D., M.B.A., Department of General and Vascular Surgery, Wojewódzki Specjalistyczny Szpital im. dr M. Pirogowa w Łodzi, ul. Wólczańska 195, 90-531 Łódź; e-mail: konradwronski@wp.pl

INTRODUCTION

Anal condylomata was a well-known disease in ancient times but in recent years there has been a rapidly increasing number of people who suffer from this disease [10,20,25]. The main cause of this disease is infection of human papilloma virus (HPV) which occurs through sexual contact. It is estimated that genital infection of HPV in the adult U.S. population ranges from 10% to 20% due to young age of sexual initiation and a growing number of sexual partners [10,13,25].

Over 100 types of human papilloma viruses are known [4,10,12,13,18]. In 90% of anal condylomata cases, variant 6 or 11 of this virus is present [4,7,12,13,18]. HPV has a double-stranded DNA, which has an affinity for keratinocytes [4,7,12,18]. The risk of HPV infection in the case of sexual contact with an infected person is approximately 70% [4]. The incubation period of this virus is estimated as from 3 weeks up to 8 months and depends on the response of both the cellular and humoral immune system [4,10,13].

Currently there are three different ways to treat anal condylomata: local therapy (podophyllin, podophyllotoxin and trichloroacetic acid), immunomodulatory treatment (interferon and imiquimod) and surgery (surgical excision, electrosurgery, cryotherapy and laser therapy) [3,9,14,15,19].



Fig. 1. Extensive anal condylomata in one of the operated patients

Selection of treatment should be dependent on the location and size of changes and patient consent [4,7,12,14,15,18,19]. Small changes of anal condylomata can be treated with local therapeutic agents, but the best results of treatment of extensive changes are obtained by surgical techniques (Fig. 1) [3,4,7,9,12,18].

MATERIAL AND METHODS

The study group consisted of 30 patients with diagnosed extensive anal condylomata who underwent surgery



in Mikolaj Pirogow High Specialized Hospital in Lodz. The survey was conducted from 2007 to 2011. Patients had been directed to the surgical ward by general surgeons and practitioners, proctologists and urologists. The diagnosis was made after proctological assessment in the knee-chest position.

In this survey the authors included patients with >50% confluent anal condylomata. The median age of men was 36. Patients had no anal cancer in pathological examination after electrosurgery and did not need chemo- or radiotherapy. The authors assessed the following complications: anal stenosis, recurrent disease, infection, bleeding requiring hospitalization, and death. Anal stenosis was defined as a scar-induced narrowing of the anal canal resulting in functional outlet obstruction or inability to allow a digital rectal exam.

The study included 30 patients – only men. The predominant age of respondents ranged from 26 to 44 years old – there were 27 (76.6%) treated patients. In the group of patients who underwent surgery, 21 (70.0%) had secondary education. Among the 30 respondents, 27 (90.0%) lived a city with over 500 000 citizens (Table 1).

The necessary calculations were performed using the package STATISTICA 7.1 and EXCEL 2008.

RESULTS

Among 30 treated patients there were no patients suffering from liver cirrhosis, fissure in ano-rectal prolapse or proctitis. Patients did not take anticoagulants. Among all patients, 26 (86.7%) were homosexual and 4 (13.3%) of them heterosexual. Postoperative follow-up of patients was 4.4 months (range 1–13 months). In the research group, 4 (13.3%) patients underwent surgery earlier.

All patients underwent surgery and had complete macroscopic electroexcision of anal condylomata. Among 30 patients, 28 (93.3%) had condylomata in the anal canal. Excised condylomata were sent for routine histopathological examination which showed no dysplasia or cancer. None of the 30 patients underwent any additional treatment.

In the research group there was no mortality. Postoperative complications occurred in 4 (13.3%) patients – postoperative bleeding. Strong pain was present in 14 (46.7%) patients but only in the postoperative period.

During postoperative follow-up there was no observed infection in the anal region or recurrence of disease. Despite the fact that patients were informed about the necessity of regular visits to the proctology outpatient room, the medium time of postoperative follow-up was 4.4 months. In the operated group there was no observed cosmetic deformation of the anus and/or the anal canal, narrowed anal canal or functional fecal incontinence symptoms.

DISCUSSION

Surgical excision of extensive anal condylomata can cause cosmetic deformation of the anus and/or the anal canal and cause scarring which may narrow the anal canal as well as functional fecal incontinence symptoms.

Table 1. Features of the treated group

		No. of patients	[%]
Age	under 25 years old	2	6.7
	from 26 to 44 years old	27	76.6
	from 45 to 64 years old	5	16.7
	over 65 years old	0	0.0
	total	30	100.0
Sex	female	0	0.0
	male	30	100.0
	total	30	100.0
Domicile	in a city of over 500 000 citizens	27	90.0
	in a city of 25 000 to 500 000 citizens	3	10.0
	in a town of fewer than 25 000 citizens	0	0.0
	in the countryside	0	0.0
	total	30	100.0
Education	primary	0	0.0
	vocational	5	16.7
	secondary	21	70.0
	university	4	13.3
	total	30	100.0

Anal stenosis is a serious complication of anorectal surgery. Such problems are observed mainly in the group of patients who have undergone hemorrhoidectomy (Fergusson or Milligan-Morgan) [1,11,16]. 5–10% of surgically treated patients with hemorrhoids had anal stenosis, which in 87% of patients was associated with a previous hemorrhoidectomy [1,11,16,21]. The main cause of this disorder is excision of large areas of anoderm and hemorrhoidal rectal mucosa from the lining of the anal canal.

The best prevention of postsurgical anal stenosis is adequate anorectal surgery. The surgeon should have excellent knowledge of the anatomy of the anal region and have extensive experience in anorectal operations, because “practice makes perfect”. It is important to treat tissues delicately and make minimal resection of anoderm with condylomata. Adequate care of patients after surgical excision of extensive anal condylomata should involve frequent changes of dressings and postoperative checkups in the proctology outpatient room.

Because of the risk of strictures and scars causing deformation of the anorectal region, some doctors suggest after surgical excision of extensive anal condylomata reconstructive operations using bilateral rotational S-flaps or other methods such as V-Y flaps, musculocutaneous flaps, free flaps and skin grafting [5,6,8,17,22,27]. In the literature, there have been reported various complications after these methods of treatment, such as flap necrosis, infection,

local sepsis, fecal incontinence and sloughing of the flap [6,8,17,22–24,26].

The authors of this article suggest that extensive anal condylomata should be treated in high-specialized departments, where hemorrhoids and warts are often operated on. Experience and excellent surgical technique are necessary to prevent anal stenosis among operated patients. The authors believe that surgical excision of extensive anal condylomata with simultaneous reconstructive operations using various flaps should not be performed routinely. Reconstructive surgery should be reserved for patients who have symptoms of strictures and scars causing deformation of the anorectal region.

Simultaneous surgical excision of extensive warts and flap reconstruction is unreasonable from the standpoint of economics of treatment. After these operations the patient's stay in the surgical ward extends to several days. Such extensive surgery needs to implement effective, but also expensive treatment of pain. The treatment costs are high but the final effect uncertain because of potentially high local morbidities related to the flaps.

In the study by Alam et al. [2] published in 2001, the authors compared the cost of treating genital condylomata by available methods. In the cost-effectiveness analysis of genital condylomata treatment, the authors took into account

the time of treatment, medical visits and consultations with the published data in medical literature, and also the average wholesale prices of drugs. The lowest direct cost of cure of condylomata related to surgical excision with a scalpel was \$ 285 and electric knife surgery \$ 316–347. The average cost of a complete cure of condylomata by laser excision was \$ 416, by podophyllotoxin \$ 424, and by cryotherapy excision \$ 951. The highest average cost of a complete cure of condylomata was for treatment with trichloroacetic acid (\$ 986), imiquimod (\$ 1255), podophyllin (\$ 1632) and interferon (\$ 6665). The economic analysis shows that the most effective and the cheapest methods of treatment of condylomata are surgical techniques (scalpel and electrosurgery). Alam' ai et al. [2] suggest that patients who do not want to undergo surgery should be treated with drugs containing podophyllotoxin.

The authors of this article believe that patients should be informed and reminded about periodic visits to the outpatient room to prevent the recurrence of warts. Early detection of recurrent anal condylomata will enable implementation of effective local or surgical treatment.

COMPETING INTERESTS

There were no competing interests. The study was sponsored by the author of this article. There were no financial or non-financial competing interests (personal, political, religious, academic, intellectual or any other).

REFERENCES

- [1] Aitola P.T., Hiltunen K.M., Matikainen M.J.: Y-V anoplasty combined with internal sphincterotomy for stenosis of the anal canal. *Eur. J. Surg.*, 1997; 163: 839–842
- [2] Alam M., Stiller M.: Direct medical costs for surgical and medical treatment of condylomata acuminata. *Arch. Dermatol.*, 2001; 137: 337–341
- [3] Arany L., Tying S.K., Brysk M.M., Stanley M.A., Tomai M.A., Miller R.L., Smith M.H., McDermott D.J.: Correlation between pretreatment levels of interferon response genes and clinical responses to an immune response modifier (Imiquimod) in genital warts. *Antimicrob. Agents Chemother.*, 2000; 44: 1869–1873
- [4] Baken L.A., Koutsky L.A., Kuypers J., Kosorok M.R., Lee S.K., Kiviat N.B.: Genital human papillomavirus infection among male and female sex partners: prevalence and type-specific concordance. *J. Infect. Dis.*, 1995; 171: 429–432
- [5] Bonnichon P., Bellouard A., Richardson A., Bordier C., Diner P., Chapuis Y.: Anal plasty after excision of giant condyloma acuminata. *Presse Med.*, 1988; 17: 74–76
- [6] Burt C.V.: Thick split-skin graft for anal stenosis, Paget's disease, condyloma acuminata, pruritus ani and other anorectal conditions: report of four cases. *Dis. Colon Rectum*, 1961; 4: 319–326
- [7] Coleman N., Birley H.D., Renton A.M., Hanna N.F., Ryaite B.K., Byrnes M., Taylor-Robinson D., Stanley M.A.: Immunological events in regressing genital warts. *Am. J. Clin. Pathol.*, 1994; 102: 768–774
- [8] De Toma G., Cavallaro G., Bitonti A., Polistena A., Onesti M.G., Scuderi N.: Surgical management of perianal giant condyloma acuminatum (Buschke-Lowenstein tumor). Report of three cases. *Eur. Surg. Res.*, 2006; 38: 418–422
- [9] Fife K.H., Ferenczy A., Douglas J.M. Jr, Brown D.R., Smith M., Owens M.L.: Treatment of external genital warts in men using 5% imiquimod cream applied three times a week, once daily, twice daily, or three times a day. *Sex Transm. Dis.*, 2001; 28: 226–231
- [10] Fleischer A.B., Parrish C.A., Glenn R., Feldman S.R.: Condylomata acuminata (genital warts): patient demographics and treating physicians. *Sex Transm. Dis.*, 2001; 28: 643–647
- [11] Habr-Gama A., Sobrado C.W., de Araujo S.E., Nahas S.C., Birbojm I., Nahas C.S.R., Kiss D.R.: Surgical treatment of anal stenosis: assessment of 77 anoplasties. *Clinics (Sao Paulo, Brazil)*, 2005; 60: 17–20
- [12] Ho G.Y., Bierman R., Beardsley L., Chang C.J., Burk R.D.: Natural history of cervicovaginal papillomavirus infection in young women. *N. Engl. J. Med.*, 1998; 338: 423–428
- [13] Kodner C.M., Nasrati S.: Management of genital warts. *Am. Fam. Physician.*, 2004; 70: 2335–2342
- [14] Krogh von G., Longstaff E.: Podophyllin office therapy against condylomata should be abandoned. *Sex Transm. Infect.*, 2001; 77: 409–412
- [15] Lacey C.J., Goodall R., Tennvall G.T., Maw R., Kinghorn G.R., Fisk P.G., Barton S., Byren I.: Randomised controlled trial and economic evaluation of podophyllotoxin solution, podophyllotoxin cream, and podophyllin in the treatment of genital warts. *Sex Transm. Infect.*, 2003; 79: 270–275
- [16] Lagares-Garcia J.A., Noguera J.J.: Anal stenosis and mucosal ectropion. *Surg. Clin. N. Am.*, 2002; 82: 1225–1231
- [17] Liberman H., Thorson A.G.: How I do it. Anal stenosis. *Am. J. Surg.*, 2000; 179: 325–329
- [18] Lombard I., Vincent-Salomon A., Validire P., Zafrani B., de la Rochefordiere A., Clough K., Favre M., Pouillart P., Sastre-Garau X.: Human papillomavirus genotype as a major determinant of the course of cervical cancer. *J. Clin. Oncol.*, 1998; 16: 2613–2619
- [19] Longstaff E., von Krogh G.: Condylomata eradication: self-therapy with 0.15–0.5% podophyllotoxin versus 20–25% podophyllin preparations – an integrated safety assessment. *Regul. Toxicol. Pharmacol.*, 2001; 33: 117–137
- [20] Metcalf A.M., Dean T.: Risk of dysplasia in anal condyloma. *Surg.*, 1995; 118: 724–726
- [21] Milsom J.W., Mazier W.P.: Classification and management of post-surgical anal stenosis. *Surg. Gynecol. Obstet.*, 1986; 163: 60–64
- [22] Oh C., Albanese C.: S-plasty for various anal lesions. *Am. J. Surg.*, 1992; 163: 606–608
- [23] Oh C., Zinberg J.: Anoplasty for anal stricture. *Dis. Colon Rectum*, 1982; 25: 809–810
- [24] Pidala M.J., Slezak F.A., Porter J.A.: Island Flap anoplasty for anal canal stenosis and mucosal ectropion. *Am. Surg.*, 1994; 60: 194–196
- [25] Silva P.D., Micha J.P., Silva D.G.: Management of condyloma acuminatum. *J. Am. Acad. Dermatol.*, 1985; 13: 457–463



[26] Stratmann H., Kaminski M., Lauschke H., Hirner A.: Plastic surgery of the anorectal area. Indications, technique and outcome. *Zentralbl. Chir.*, 2000; 125: 161–165

[27] Trombetta L.J., Place R.J.: Giant condyloma acuminatum of the anorectum: trends in epidemiology and management: report of a case and review of the literature. *Dis. Colon Rectum*, 2001; 44: 1878–1886

The authors have no potential conflicts of interest to declare.