

# Changing trends in the surgical treatment of female stress urinary incontinence – twenty two years observation

Zmiany w sposobie leczenia operacyjnego wysiłkowego nietrzymania moczu u kobiet – obserwacje ostatnich dwudziestu dwóch lat

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## Abstract

**Objectives:** The aim of this study was to analyze the changing trends in surgical treatment of female urinary incontinence (UI).

**Material and methods:** Medical records of all women admitted to II Department of Gynecology from 1985 to 2006 were analyzed in order to find out how the female SUI treatment changed over these years.

**Results:** During analyzed time 36819 patients were hospitalized in our Department and 77.6% (28568) of them were operated because of various indications. The number of SUI surgeries among all hospitalized women steadily rose from 1.93% in 1985 to 10.96% in 2006 reaching maximum in 2005 (13.73%). Clinical effectiveness of SUI surgeries markedly improved from 35% for anterior colporrhaphy to almost 90 % for suburethral slings.

**Conclusions:** Introduction into clinical practice modern suburethral slings improved clinical efficacy of SUI treatment. The percentage of women admitted and treated surgically because of SUI steadily increased over the last years.

Keywords: **stress urinary incontinence / incontinence surgery / suburethral slings /**

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## Streszczenie

**Cel pracy:** Celem pracy było przeprowadzenie retrospektywnej analizy metod operacyjnego leczenia wysiłkowego nietrzymania moczu (WNM) u kobiet na przestrzeni ostatnich dwudziestu dwóch lat.

**Materiał i metody:** Dane do analizy pozyskano z archiwum medycznego II Kliniki Ginekologii i na ich podstawie przedstawiono zmiany w operacyjnym leczeniu WNM u kobiet od 1985 do 2006 roku.

**Wyniki:** W analizowanym okresie, w II Klinice hospitalizowanych było 36819 kobiet, z czego 77,6% (28568) było operowanych z powodu różnych wskazań. Liczba pacjentek operowanych z powodu WNM stale rosła od 1,93% w 1985r. do 10,96% w 2006r. ze szczytem w 2005r. (13,73%). Również skuteczność zabiegów znacznie wzrosła z 35% w przypadku różnych modyfikacji plastyki przedniej ściany pochwy do niemal 90% przy zastosowaniu taśm podcewkowych.

**Wnioski:** Wprowadzenie nowoczesnych, małoinwazyjnych taśm podcewkowych znacząco zwiększyło efektywność operacyjnego leczenia WNM. Wydaje się to być jedną z przyczyn stałego wzrostu liczby kobiet decydujących się na tą metodę leczenia tej dolegliwości.

Słowa kluczowe: **wysiłkowe nietrzymanie moczu / operacyjne leczenie WNM /  
/ taśmy podcewkowe /**

## Introduction

Stress urinary incontinence (SUI) is a very common condition, especially in women, and affects almost all aspects of everyday life, influencing not only affected individuals but also their families [1]. The exact prevalence rate of this disorder is not known exactly since different studies have used different methods of assessment based on design of the questionnaires, the study population and selection criteria as well [2].

However as a rule the prevalence of urinary incontinence (UI) increases with age, with a typical rate in young adults around 20 to 30%, a peak around middle age (30–40%) and a steady increase in old age (30–50%) [3].

Our own data estimated the general prevalence rate of UI among Polish women to be 17% with a peak around menopause with 33% [4]. However, even in Europe the UI prevalence rate might be different among nations. Recently published data from four European countries, based on epidemiological study from 29 500 community dwelling women aged 18 years showed the lowest prevalence rate in Spain (23%), while the prevalence was 44%, 41% and 42% for France, Germany and the UK, respectively [5]. When type of incontinence was taken into account the prevalence of stress symptoms was the highest among all women who reported UI (all age groups combined) [5]. These findings from European countries are in agreement with worldwide data previously presented by Minassian and co-workers [6].

The very common occurrence of stress urinary incontinence along with its deleterious influence of everyday life of affected individuals calls for effective treatment options. This is of critical importance since SUI can result in a number of adverse consequences including skin problems, urinary tract infections, longer hospital stays for non-SUI related conditions and nursing home admissions. Since, as a rule, there is often a large overlap in urinary symptoms, accurate diagnosis is mandatory before therapy is instituted because the treatment of each condition may be completely different.

Usually a conservative approach is advisable initially, especially if symptoms are only mild, or easily manageable and surgery should be avoided when a woman's family is incom-

plete, or when symptoms manifest during pregnancy or soon after delivery. However surgery for stress urinary incontinence has been performed on women for almost a century. Since pioneer work of Kelly published in 1913 the anterior vaginal repair used to be the most popular primary procedure for stress incontinence up to the 1970s, but over the last 20 years this operation has been criticized because of high recurrence rates.

## Aim

The aim of this study was to analyze the changing trends in surgical treatment of stress urinary incontinence based on data from II Department of Gynecology, University School of Medicine Lublin, Poland.

## Material and methods

Medical records of all women admitted to II Department of Gynecology from 1985 to 2006 were analyzed in order to elucidate how we treated SUI patients over these time.

We selected out all performed incontinence surgeries and divided them according to type of procedure and their clinical efficacy. Data including type of operation performed, number of operations and number of all patients hospitalized in particular years as well as percentage of all performed surgical procedures were calculated in analyzed time frame. Chi square test was used to compare clinical efficacy of various types of SUI surgeries performed in our Department in years 1985-2006. The p value <0.05 was considered as statistically significant

## Results

Among all gynecological surgeries performed in years 1985-2006 (n= 28568) 7.02% were done due to stress urinary incontinence (n=2006). (Table I, Figure II).

The majority of incontinent patients were operated via vaginal route (n=1773; 88.38%). One hundred twenty five women (7.05%) underwent classical Burch operation, whereas laparoscopic colposuspension was performed among 108 women (5.38%).

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Table I. All analyzed data from medical records since 1985.

TYPE OF PROCEDURE / YEAR	Anterior colporrhaphy	LIPOINFUSION	BURCH	Laparoscopic BURCH	MMK	TVT	IVS	TOT	TFS	TVT SECURE	No of surgeries of UI in year	No of all surgeries	No of patients hospitalized	% of surgeries
1985	31	0	0	0	3	0	0	0	0	0	31	1265	1603	78,9
1986	24	0	0	0	1	0	0	0	0	0	24	1278	1628	78,5
1987	17	0	0	0	2	0	0	0	0	0	17	1125	1592	70,7
1988	34	0	0	0	2	0	0	0	0	0	34	1207	1598	75,5
1989	48	0	0	0	1	0	0	0	0	0	48	1247	1553	80,3
1990	38	0	0	0	4	0	0	0	0	0	38	1270	1631	77,9
1991	57	0	0	0	6	0	0	0	0	0	57	1262	1664	75,8
1992	45	0	0	0	3	0	0	0	0	0	45	1281	1671	76,7
1993	43	0	0	0	4	0	0	0	0	0	43	1249	1687	74,0
1994	69	0	0	0	8	0	0	0	0	0	69	1302	1747	74,5
1995	58	0	0	0	7	0	0	0	0	0	58	1256	1652	76,0
1996	31	0	14	6	4	0	0	0	0	0	51	1198	1723	69,5
1997	41	0	15	28	4	0	0	0	0	0	84	1203	1691	71,1
1998	8	0	11	58	1	1	0	0	0	0	78	1228	1638	75,0
1999	6	1	10	16	0	11	0	0	0	0	44	1257	1555	80,8
2000	4	0	2	0	0	90	0	0	0	0	96	1234	1551	79,6
2001	3	0	4	0	0	159	0	0	0	0	166	1292	1631	79,2
2002	1	0	12	0	0	9	152	0	0	0	174	1350	1769	76,3
2003	3	0	9	0	0	22	156	0	0	0	190	1476	1760	83,9
2004	0	0	20	0	0	4	71	114	0	0	209	1513	1760	86,0
2005	0	0	15	0	0	1	182	0	24	0	212	1383	1544	89,5
2006	0	0	13	0	0	3	212	0	6	4	238	1692	2171	77,9
<b>Total</b>	<b>511</b>	<b>1</b>	<b>125</b>	<b>108</b>	<b>50</b>	<b>300</b>	<b>763</b>	<b>114</b>	<b>30</b>	<b>4</b>	<b>2006</b>	<b>28568</b>	<b>36819</b>	

We observed a steadily raising trend in number of patients operated due to SUI in our Department from 31 (1.93% of all hospital admissions in 1985) to 238 (10.96% of all admissions in 2006). (Table II, Figure 1).

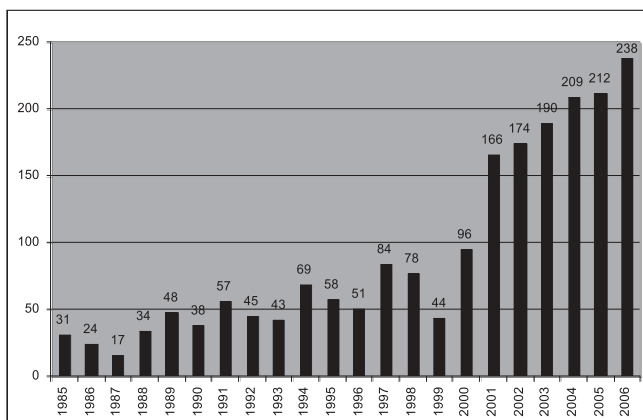


Figure 1. Number of surgeries in stress urinary incontinence.

From 1985 to 1997 the dominant type of procedure was anterior colporrhaphy (various modifications) despite its unacceptable clinical efficacy. (Table III and IV).

This trend has changed in 1998 after introduction to our clinical practice laparoscopic Burch colposuspension with much better clinical outcome. (Table III).

The new era of minimally invasive surgical treatment of female SUI in our Department started in year 2000 with the introduction suburethral sling operations. (Table I and III).

Smaller number of patients hospitalized as well as surgeries performed in 2005 was due to renovation works in our Department lasting from 14th of October till 31st December. The clinical outcome of different type of surgeries used in the treatment of female stress urinary incontinence clearly show that anterior colporrhaphy should be abandoned in the treatment of this condition. (Table IV).

## Discussion

It should be stressed that the mainstay of initial therapy for stress incontinence is pelvic floor physiotherapy. This should routinely be used as the first-line treatment. The advantage of this approach is that many women can be cured or improved to the point they do not require surgery, with its potential complications. Recently, a new drug has been developed, specifically for the treatment of stress incontinence.

**Table II.** The percentage of women suffering from SUI among all treated women.

YEAR	No of patients with SUI	All hospitalized patients	% of SUI patients
1985	31	1603	1,93
1986	24	1628	1,47
1987	17	1592	1,06
1988	34	1598	2,12
1989	48	1553	3,09
1990	38	1631	2,32
1991	57	1664	3,42
1992	45	1671	2,69
1993	43	1687	2,54
1994	69	1747	3,95
1995	58	1652	3,51
1996	51	1723	2,96
1997	84	1691	4,97
1998	78	1638	4,76
1999	44	1555	2,83
2000	96	1551	6,19
2001	166	1631	10,17
2002	174	1769	9,84
2003	190	1760	10,79
2004	209	1760	11,87
2005	212	1544	13,73
2006	238	2171	10,96
<b>Total</b>	<b>2006</b>	<b>36819</b>	
	<b>Mean %</b>		<b>5,32</b>

**Table III.** Surgeries classified as anterior colporrhaphy.

Type of operation / Year	MIESZCZERSKI	Anterior vaginal wall plasty	KENEDY/KELLY
1985	12	8	8
1986	13	6	4
1987	10	2	3
1988	18	7	7
1989	28	8	11
1990	18	12	4
1991	30	18	3
1992	25	13	4
1993	24	14	1
1994	36	18	7
1995	29	15	7
1996	15	11	1
1997	18	15	4
1998	2	5	0
1999	1	5	0
2000	3	1	0
2001	2	1	0
2002	0	1	0
2003	2	1	0
2004	0	0	0
2005	0	0	0
2006	0	0	0
<b>Total</b>	<b>286</b>	<b>161</b>	<b>64</b>
<b>Anterior colporrhaphy</b>		<b>511</b>	

**Tabela IV.** Clinical outcome of different types of surgeries.

Type of surgery	Anterior colporrhaphy	Laparoscopic BURCH	BURCH	TVT	IVS 02	IVS 04
Number of surgeries	511	108	125	300	405	506
Clinical outcome (% of cured patients)	35%	72,2%	73,6%	91,2%	80%	77%
Time of observation	5 years	22 months	24 months	12-24 months	24-36 months	12-36 months
Hospitalization after surgery	5-6 days	3-4 days	7-9 days	3 days	2-3 days	2-3 days
Catheterisation	4 days	24 hrs	24hrs	24 hrs	24hrs	24 hrs

We do not included in current analysis recently introduced new, microinvasive methods like TFS or TVT Secure because of relatively small number of operated patients and short observation time.

Duloxetine is a potent serotonin and noradrenaline reuptake inhibitor (SNRI) that enhances urethral striated sphincter activity via a centrally mediated pathway [7].

The clinical data strongly suggests that duloxetine is an effective alternative to surgery and may be complimentary to the use of physiotherapy in the initial management of women with stress incontinence [8, 9].

However surgery remains the cornerstone of treatment for women with a diagnosis of severe SUI and also in those who have failed to improve with conservative methods.

Among surgical procedures used in SUI treatment are: anterior colporrhaphy and its various modifications, Marschall-Marchetti-Krantz (MMK) and Burch colposus-

pension with its laparoscopic modifications, paravaginal repair, needle suspension procedures, sling procedures (using autologous and synthetic materials), injectable agents and artificial sphincters.

As it was shown in Table I and III not all these procedures were used in our Department during analyzed time period. Unfortunately, the anterior colporrhaphy procedure with bladder buttress in many gynecological (but not urogynecological) departments still remains the most common surgery for urodynamic stress incontinence.

However, case report literature indicates a wide range of continence rates following this procedure, ranging from 31% to 100% [10].

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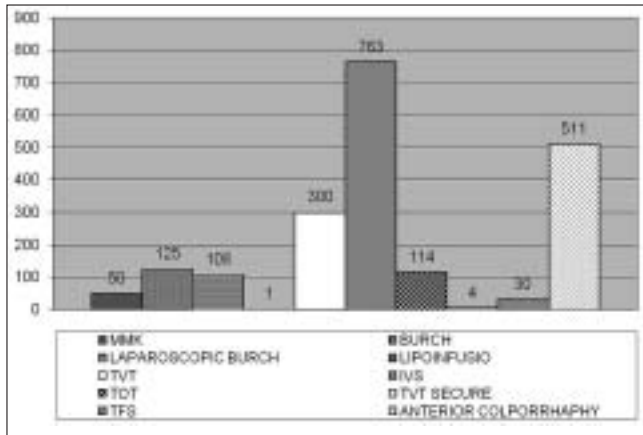


Figure 2. Number of different types of urinary incontinence surgeries.

This was also the case in our series where only 35% of patients remained dry after 5 years of observation. Of course it should be stressed that this kind of procedure is characterized by very low morbidity rate but its very low efficacy clearly disqualify it as a method of choice for female SUI treatment. Few meta-analyses suggest a continence rate after anterior repair ranging from 67.8% to 72.0% although this method is not recommended by current therapeutical guidelines [11, 13]. Randomized trials including anterior colporrhaphy in one arm and suprapubic surgery in the other show a continence rate of 66% for vaginal repair [12]. According to experts from the American Urological Association so called “anterior repairs” are the least likely, of the four major operative categories (anterior repair, suburethral sling, colposuspension, long-needle suspension), to be efficacious in the long term [13]. This was definitely the main reason that we changed our surgical practice when concerning incontinent women and as a consequence anterior colporrhaphy was abandoned since 1998 as a method of SUI treatment in our Department.

However it should be mentioned that since the most accurate operation for the woman with stress incontinence in the presence of anterior wall prolapse is currently unclear anterior repair still remains a surgical option for the correction anterior vaginal wall anatomy. The place of Burch colposuspension among other continence procedures was a topic of a Cochrane review in 2003 [14]. The authors concluded that open Burch colposuspension is the most effective surgical treatment for stress incontinence, especially in the long term. Data from 33 trials involving 2403 women clearly shown that Burch colposuspension is more effective than needle suspension (14% subjective failure after one year for open colposuspension compared with 26% for needle suspension) and provides a similar subjective continence rate to laparoscopic colposuspension (85-100% after 6-18 months of follow-up). Similarly, even when compared to the recently most popular suburethral sling procedures, colposuspension either open or laparoscopical show a similar continence rate [15, 16].

Moreover, there was no evidence of increased morbidity or complication rate associated with open colposuspension compared with other techniques, although posterior pelvic organ prolapse is more common than after anterior colpor-

rhaphy and sling procedures. We performed laparoscopic Burch colposuspension almost routinely in women with urodynamically proven stress urinary incontinence in 1997 and 1998, but finally we abandoned it since TVT was introduced into clinical practice in our Department [17, 18].

The main reasons for this was technical simplicity of suburethral slings accompanied by very high clinical efficacy paralleled by very low complications rate. The use of sling procedures in the treatment of stress incontinence was first described over 100 years ago, but these procedures were not very popular until the tension-free vaginal tape (TVT) was introduced into clinical practice by Petros and Ulmsten in 1995 [19].

Nowadays, all suburethral sling operations are based on “tension free principles” and that means that tapes are placed beneath the urethra without any additional fixation. As it was shown, we routinely use sling operations (TVT and IVS) since 2000 with very high success rates and low complications rates [20]. In 2001 Delorme first described the method of tape placement through obturator foramen with possible advantage over retropubic route in decreasing complications rate without losing clinical efficacy [21]. Based on very encouraging preliminary reports since the beginning of 2004 we almost replaced retropubic procedures in favor to transobturator one and this enable us to reduce intraoperational complications while maintaining efficacy [22].

Currently numerous autologous and synthetic materials or even xenografts are available for use in a suburethral sling with polypropylene tapes being the most popular. Overall, with all of these materials the risk of vaginal erosion ranges from zero to approximately 16%, urethral erosion from 0 to 5%, de novo detrusor overactivity from 3.7 to 66.0%, and procedures requiring sling revision or removal range from 1.8 to 35% [23].

When compared with colposuspension procedures, the suburethral sling carries a similar success rate but the surgical technique is much simpler and therefore learning curve much shorter [12]. This appears to be true even in patients with low maximal urethral closure pressure [24]. It should be noted that The Second International Consultation on Incontinence concluded that suburethral slings represented an effective procedure for genuine stress incontinence also in the presence of previous failed surgery [12].

Nowadays, it is obligatory that women undergoing surgery for stress incontinence should have urodynamic investigations (including cystometry) prior to treatment, and this opinion was also recently stated by experts of Polish Gynecological Society [25]. Since 1999 we follow strictly this procedure. It seems prudent prior to performing irreversible bladder-neck surgery to have assessed objectively the type of incontinence and the presence of any complicating factors such as voiding difficulty or detrusor overactivity. One should remember that urodynamic findings often may affect the surgical decision and provide solid basis for informed consent. And last but not least, surgery should be performed by a surgeon who has been trained in the operation and who has a caseload that enables him or her to provide a suitable level of expertise since the best chance of surgical ‘cure’ for stress incontinence is successful primary surgery. Of course the proper surgical training is especially important when any repeat surgery is considered.

## Conclusions

1. Steady increase of number of patients operated due to SUI in our Department was observed during last 22 years.
2. Anterior colporrhaphy because of unacceptable low clinical efficacy should be abandoned as a method of SUI treatment.
3. Current state of the art in the field of continence surgery are minimally invasive suburethral slings because of their technical simplicity accompanied by high clinical efficacy and low complications rates.

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# Aktualne poglądy dotyczące leczenia chorych z błoniakiem ziarnistym jajnika

## Current views on treatment of the ovarian granulosa-cell tumor

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### Streszczenie

Ziarniszczak ( błoniak ziarnisty, folliculoma ) jest rzadkim nowotworem jajnika i stanowi około 5% wszystkich guzów złośliwych tego narządu [1].

Jest najczęstszym nowotworem wywodzącym się ze sznurów płciowych, stwierdza się go w ponad 70% przypadków [1].

Błoniak ziarnisty należy do guzów hormonalnie czynnych, wywodzi się z komórek ziarnistych zrębu, które produkują estradiol. Jego nadmierna sekrecja wywołuje szereg objawów klinicznych, które są pomocne w diagnostyce tego nowotworu.

Wyróżniamy dwa typy błoniaka ziarnistego: typ młodzieńczy (5%) i typ dorosłych (95%).

Typ młodzieńczy rozpoznawany jest zazwyczaj (90%) w I stopniu zaawansowania wg FIGO i wiąże się z lepszym rokowaniem, a zabieg operacyjny jest często wystarczającą metodą leczenia [1]. Guzy w wyższym stopniu zaawansowania cechują się bardziej agresywnym przebiegiem z częstymi nawrotami i koniecznością leczenia skojarzonego [2]

Rozpoznanie ziarniszczaka typu dorosłych wiąże się z bardziej agresywnym przebiegiem, częstszymi nawrotami i wyższą śmiertelnością. Postać pierwotnie zaawansowana miejscowo nawraca często wiele lat po zabiegu. Pacjentki z zaawansowaną chorobą wymagają adjuwantowej radioterapii bądź chemioterapii [1]. Tak zwane stare leki (pochodne platyny) jak i nowe (taksany) wykazują aktywność w leczeniu błoniaka ziarnistego.

Aktualnie podstawowym postępowaniem jest chemioterapia według schematu BEP (Bleomycyna, Etopozyd, Cisplatyna). Istnieje jednak konieczność przeprowadzenia randomizowanych badań klinicznych w celu ustalenia standardów postępowania u tych chorych.

Słowa kluczowe: **błoniak ziarnisty / operacja / radioterapia / chemioterapia / wznowa /**

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