



**HAL**  
open science

## Urinary incontinence in women: study of surgical practice in France.

David Desseauve, Fabrice Pierre, Xavier Fritel

► **To cite this version:**

David Desseauve, Fabrice Pierre, Xavier Fritel. Urinary incontinence in women: study of surgical practice in France.. Progrès en Urologie, 2013, 23 (4), pp.249-55. 10.1016/j.purol.2012.12.005 . inserm-00846209

**HAL Id: inserm-00846209**

**<https://inserm.hal.science/inserm-00846209>**

Submitted on 18 Jul 2013

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

1 Titre :

2 Incontinence urinaire féminine : Étude des pratiques chirurgicales en France.

3 Urinary incontinence in women: A study of surgical practices in France

4

5 Auteurs :

6 Dr David Desseauve<sup>1</sup>, MD, MPH

7 Pr Fabrice Pierre<sup>1</sup>, MD

8 Pr Xavier Fritel<sup>1,2</sup>, MD, PhD

9

10

11 Institutions :

12 1 Université de Poitiers, CHU de Poitiers, France.

13 2 INSERM CIC802, Poitiers, France.

14

15 Correspondance :

16 Dr Desseauve, Service de Gynécologie-Obstétrique et Médecine de la Reproduction,

17 CHU de Poitiers, 2 rue de la Milétrie, 86000 Poitiers, France.

18 Secrétariat 05 49 44 39 45, fax 05 49 44 39 10

19 [desseauve.d@gmail.com](mailto:desseauve.d@gmail.com)

20

21 RÉSUMÉ :

22 But :

23 Préciser le nombre et le type des interventions chirurgicales pour incontinence  
24 urinaire chez les femmes en France.

25 Matériel:

26 À partir des données du Programme de Médicalisation des Systèmes d'Information  
27 (PMSI) de 2009, nous avons analysé pour trois Groupes-Homogènes-de-Malades  
28 (GHM), regroupant la majorité des actes de chirurgie de l'incontinence urinaire  
29 d'effort (Cervicocystopexie, Réparation de l'appareil génital féminin, et  
30 Hystérectomie), la distribution des interventions chirurgicales qui y étaient  
31 répertoriées.

32 Résultats :

33 42223 procédures chirurgicales pour incontinence urinaire d'effort ont été réalisées  
34 en France en 2009, 92% (n=38929) sont des bandelettes sous-urétrales. L'acte est  
35 dans 58% (n=24387) des cas isolé et pour le reste associé à un geste sur la statique  
36 pelvienne dans 25% des cas (n=10741) ou à une hystérectomie dans 16% des cas  
37 (n=6671). Lorsque la chirurgie de l'incontinence urinaire d'effort est le seul acte  
38 réalisé, l'âge moyen des opérées est de 56,5 ans et la durée moyenne de séjour de  
39 1,9 jour. Cinquante sept pour cent (n=24037) des actes sont effectuées en secteur  
40 privé.

41 Conclusion :

42 En 2009, dix ans après son introduction en France, la bandelette sous-urétrale  
43 représentait l'immense majorité des interventions pour incontinence urinaire. Si on  
44 estime à 4 millions le nombre de femmes incontinentes en France en 2009,  
45 l'incidence annuelle de cette chirurgie se situait autour de 1%.

46 Mots-Clés : épidémiologie, incontinence urinaire, femme, chirurgie, France

47 Nombre de Mots : résumé 263, texte 2711.

48

49 ABSTRACT:

50 Objective:

51 To assess the number and the types of surgical procedures for urinary incontinence  
52 among women in France. We are assuming that techniques by suburethral sling  
53 (SUS) have replaced Burch colposuspension.

54 Material:

55 Using French hospital discharge data from the 2009 Medical Information System  
56 Program (PMSI), we analyzed with regard to three homogeneous Diagnosis-Related  
57 Groups of patients (DRG), comprising the majority of stress urinary incontinence  
58 surgical procedures (Cervicocystopexy, Prolapse repair, and Hysterectomy), the  
59 detailed distribution of the different operations indexed in that information system.

60 Results:

61 More than 42000 cervicocystopexies (42223) were carried out in France in 2009, and  
62 a SUS was used in 92% of the procedures (n=38929). In 58% of the cases  
63 (n=24387) this surgery was the only one, and in the others it was associated with  
64 prolapse repair in 25% of the cases (n=10741) or with a hysterectomy in 16%  
65 (n=6671). When a cervicocystopexy was the only operation performed, the average  
66 age of the women was 56.5 years and the average stay in hospital was 1.9 days.

67 Fifty-seven percent of the cervicocystopexies using SUS (n=24037) were carried out  
68 in private sector. Mean durations of stay were significantly shorter in the private  
69 sector than in the public sector for the diagnosis-related groups undergoing  
70 cervicocystopexy or prolapse repair.

71 Conclusion:

72 In 2009, ten years after its introduction in France, the suburethral sling is used in the  
73 overwhelming majority of cervicocystopexies in France. Among an estimated  
74 4,000,000 incontinent women in France in 2009, this surgery was undergone by  
75 approximately 1% of them each year.

76 Key words: epidemiology, urinary incontinence, woman, surgery, France

77

78 INTRODUCTION:

79 Stress urinary incontinence (SUI) in women is a public health problem on account of  
80 its prevalence, its consequences on quality of life and its costs. SUI affects an  
81 estimated three to six million women in France [1-3]. Reduction of the frequency and  
82 consequences of female urinary incontinence is figures among the one hundred  
83 public health objectives defined in 2004 by the French parliament.

84 Among the widely used surgical treatments, abdominal retropubic colposuspension  
85 (the Burch procedure) [4], was the technique of reference through the end of the  
86 1990s. The suburethral slings or tapes (SUS) that appeared at the end of the 1990s  
87 for retropubic procedures [5] and at the outset of the 2000s for transobturator  
88 procedures [6] have facilitated surgical treatment that is less invasive than and just  
89 as efficient as Burch colposuspension [7]. The simple use and low morbidity  
90 associated with curative SUS techniques have helped to boost their circulation.  
91 Scholarly organizations such as the French National College of Gynecologists and  
92 Obstetricians and the French Urology Association, of which the recommendations  
93 were recently assessed [8] recommend SUS as first-line treatment because the  
94 postoperative period is particularly short and easy to manage [9,10]. A recent study  
95 has shown that these recommendations have been widely distributed to health care  
96 professionals [11]. What is more, there are few data on surgical practices in France  
97 with regard to SUI, except in the Paris areas, where as early as the outset of the  
98 2000s, close to the 85% of SUI-related procedures were carried out with a SUS [12].  
99 At the same time, there seems to exist a trend favoring the transobturator route [13].

100 In order to precisely indicate the apportionment in France of surgical interventions for  
101 female urinary incontinence, it is necessary to possess an exhaustive data base  
102 bringing together the data from private as well as public and « mixed » public health  
103 establishments. Since no specific register exists, we deemed it pertinent to  
104 interrogate the 2009 Medical Information System Program (PMSI), which is readily  
105 accessible on the site of the French Technical Hospital Information Agency (ATIH,  
106 [www.atih.sante.fr](http://www.atih.sante.fr)).

107

## 108 MATERIALS AND METHODS

109 Subsequent to enactment of the 31 July 1991 French hospital reform Law, a medical  
110 information system program known as PMSI was put into place, and it is aimed at  
111 describing hospital activity through the coding of diagnoses and medical acts or  
112 procedures. Hospital stays are considered according to their classification in terms of  
113 Diagnosis-Related Groups (DRGs, known in French as GHM). Attendant  
114 complications or associated morbidities, length of stay and age are the elements  
115 defining the four DRG levels, which are numbered from 1 to 4.

116 The statistics available on the ATIH site have been compiled in terms of main  
117 diagnosis, medical act specific to the procedure being studied (“classifying  
118 procedure”) and DRG. Construction of a DRG is based on an algorithm to which  
119 several inputs contribute. A DRG is composed of an aggregate of hospital stays with  
120 a number of diagnoses and classifying procedures in common. As we study the  
121 construction of this algorithm, we may identify the diagnosis-related groups in which  
122 the classifying procedures we are striving to describe may be classified. Cross-  
123 referencing of the procedure data base and the group data base allowed us to define  
124 3 DRGs of interest with regard to urinary incontinence surgery in cases grouped the  
125 heading of CMD13 (disorders of the female genital apparatus). To summarize, most  
126 of the time surgery for female urinary incontinence (cervicocystopexy) takes place  
127 when a patient is classified 13 in the diagnosis-related groups 13C17  
128 (Cervicocystopexy), 13C03 (Hysterectomy), or 13C04 (Prolapse repair).

129 For each DRG of interest we have combined the distribution results by procedure for  
130 the four DRG levels and thereby spelled out the distribution of operations on the  
131 female urinary tract.

132 We verified the exhaustiveness of our data collection through cross-referencing of  
133 the data by diagnosis and by DRG. With this in mind, we conducted a search on the  
134 ATIH site for the number of hospital stays listed in the 2009 data base corresponding  
135 to diagnosis of stress urinary incontinence “N393”; at the same time and so as to  
136 have an idea of the distribution of this diagnosis in other DRGs, we counted the  
137 number of “N393” diagnoses in the 3 DRGs of interest. The results are expressed in  
138 terms of number of stays and percentage.

139

140 RESULTS

141 As regards the “Cervicocystopexy” DRG, average length of stay was 1.9 days, while  
142 average age of patient was 56.5 years (Table 1). As regards the surgical techniques  
143 employed, 97.7% of the cervicocystopexies were carried out by SUS. In this DRG,  
144 Burch colposuspension by laparotomy or laparoscopy represented less than 1% of  
145 the procedures. Sixty percent of cervicocystopexy hospitalizations took place in the  
146 private sector.

147 As regards the “Prolapse repair” DRG, average age of patient was 62.3 years and  
148 average length of stay was 4.5 days (Table 2). On account of associated procedures,  
149 the total number of medical acts included in Table 2 is higher than 100%. And in this  
150 DRG, the vaginal route was by far the most widely used, with 18274 classifying  
151 procedures reported (70%) versus 12103 for laparoscopy (45%) and only 1879  
152 (7.1%) for laparotomy. In 32.7% of the surgical operations for genital prolapse, SUS  
153 procedure was associated. Whatever the route, use of Burch colposuspension  
154 remained lower than 1%. As regards this DRG, 62% of the activity took place in the  
155 private sector. Kelly infra-urethral plication was marginal, accounting for only 4.5% of  
156 the procedures carried out, and 82% of the time, it took place in the private sector.

157 As regards the “Hysterectomy” DRG, average age was 52.9 years and average  
158 length of stay was 5.3 days (Table 3). In this group, the vaginal route appeared to be  
159 privileged. As concerns the non-vaginal route, in terms of number of stays  
160 laparotomy remained higher than laparoscopy. Cervicocystopexy by SUS was  
161 associated with 9.2% of the reported hysterectomies, which meant that in this group,  
162 it was the procedure the most frequently employed in cases of SUI. Urinary  
163 incontinence treatment by non-vaginal route was rare, representing less than 2% of  
164 the cumulative cases. Close to 50% of the hysterectomies were carried out in the  
165 private sector, with statistical distribution in terms of approach routes similar to that  
166 observed in the public sector. A few marginally employed procedures, such as  
167 bladder neck support by infraurethral myoplasty via the vaginal route and Burch  
168 colposuspension, were carried out primarily in the private sector (respectively 74%  
169 and 77% of the reported procedures).

170 A few of the treatment procedures for urinary incontinence pertained to other  
171 diagnosis-related groups having little to do with urinary incontinence, but fewer than  
172 10 women were involved. The one exception was DRG 11C041 « Other bladder

173 interventions with the exception of transurethral interventions», which involved some  
174 1315 cervicocystopexies by SUS. Unlike the three other DRGs under consideration,  
175 the grouping function for this DRG 11C041 did not discriminate by gender, and it was  
176 consequently difficult to know whether the persons having undergone treatment were  
177 women or men.

178 Comprehensive analysis shows that the number of hospital stays subsequent to a  
179 diagnosis of stress urinary incontinence “N393” inventoried in the 2009 ATIH data  
180 base was 28021. At the same time, the number of “N393” diagnoses in our three  
181 DRGs of interest was 27087. Subtraction shows that 934 “N393” SUI diagnoses,  
182 approximately 3% of the overall total, were assigned to other DRGs, and thus did not  
183 correspond to our description.

184 Table 4 provides an overall picture of the number of SUI surgical procedures listed by  
185 the PMSI in the 2009 ATIH data base. The actions mentioned correspond to the most  
186 frequent cervicocystopexy procedures in the framework of our 3 DRGs of interest,  
187 and are found in the A-293 list compiled by the PMSI. These procedures are  
188 considered as classifying procedures in accordance with the CMD 13 algorithm  
189 (disorders of the female genital apparatus). This table also includes SUI surgical  
190 procedures associated with a hysterectomy and not included in list A-293. It  
191 enumerates 42223 procedures in France of which 38929 (92%) were carried out by  
192 SUS, all establishments included. Sixty-two per cent (62%) of the operations  
193 involving SUS were performed in the private sector. As for Burch colposuspension by  
194 laparotomy (JDDA002), it represented only 564 procedures, of which 68% took place  
195 in the private sector. As for the Bologna technique, which consists in support of the  
196 bladder neck by vaginal wall sling [14], it was only marginally used, and of the 199  
197 procedures listed, 48% took place in the private sector. The overall classification of  
198 cervicocystopexies according to DRGs was 24464 (58%) for the DRG  
199 “Cervicocystopexy”, 11483 (26%) for the DRG “Prolapse repair”) and 6671 (16%) for  
200 the DRG “Hysterectomy”.

201

202

203



204 DISCUSSION

205 All told, in 2009 more than 42000 surgical procedures consisting in cervicocystopexy  
206 for SUI took place in France, and 92% of them were carried out by SUS. In over half  
207 of the cases (58%) they were isolated (“cervicocystopexy” DRG), while in the other  
208 cases, the procedures were associated with prolapse repair (26%) or a hysterectomy  
209 (16%). As regards the “cervicocystopexy” DRG, the mean age of the women having  
210 been operated was 56.5 years, and the mean duration of their stay was 1.9 days.

211 Even though more extreme values were reported, most studies have drawn the  
212 conclusion that among female adults in the general population, the prevalence of  
213 urinary incontinence ranges from 25% to 45% [2], which means that in 2009, there  
214 were around 4 million incontinent women in France. The annual incidence rate of  
215 surgery for SUI, a rate translating the per-year percentage of incontinent women in  
216 France undergoing an operation, whatever the method employed, was according to  
217 our estimate, about 1%. Even though the literature on this subject is inadequate, the  
218 recent study by Wu [15] shows that in the United States in 2010, a comparable  
219 estimate came to 1.6% (13 million incontinent women and 217,000 interventions).

220 The figures published in this work translate the incidence in France of surgical  
221 treatment for female urinary incontinence in 2009. Since a dedicated register does  
222 not yet exist, the PMSI is one of the only data bases in France allowing for a  
223 relatively precise estimate to be carried out. A PMSI-based approach is open to  
224 criticism from a methodological standpoint since it was not initially intended to be  
225 used as it is nowadays, and yet for 20 years it has effectively helped researchers to  
226 apply a measuring stick to the occurrence of a number of diseases [16]. While any  
227 diagnosis-based approach is controversial on account of its high degree of code  
228 dependency, the classifying procedure approach may be relatively comprehensive to  
229 the extent that all of the concerned medical establishments require coding in order to  
230 ensure their overall annual financing; what is more, numerous controls by social  
231 security inspectors serve to verify the exactness of the data received.

232 That said, the data base will always be dependent on the coding, and one on the  
233 limits of our study consists in the fact that in the 2009 PMSI data collection, we were  
234 unable to distinguish transobturator from retropubic tape. It would have been  
235 interesting to compare the two procedures in terms of how many times they were  
236 carried out, and it is worth noting that as of 2012, given the introduction in June 2011

237 of the code JDDDB005 for the transobturator route and the introduction in January  
238 2012 of the code JDDDB007 for the retropubic procedure, it is henceforth possible to  
239 make the necessary distinction.

240 Another source of code error resides in the withdrawal or removal of the vaginal  
241 prostheses. While there do exist specific and detailed codes pertaining to the  
242 removal or ablation of the SUS (from JRGA001 to JRGA004, JRGC001, and  
243 JRPA001), there exists no code denoting removal of a subvesical meshes that could  
244 be analogically coded by using the code employed for SUS removal. In the present  
245 study, we lacked the means to control this classification bias.

246 In order to verify the internal validity of our study we have tried to evaluate the  
247 frequency of code errors in our comprehensive analysis and come to an estimate of  
248 3%, a rate remaining acceptable for this type of study, in which it must imperatively  
249 remain lower than 10%.

250 Several external criteria of validity have confirmed the interest of our methodology.  
251 For example, the mean age of the women operated for urinary incontinence was 56.5  
252 years, and this figure is comparable to the mean ages found in other large-scale  
253 epidemiological studies based on other sources, particularly direct questioning of  
254 large segments of the population [17]. The mean ages of the female patients  
255 significantly differed (supplementary analysis not presented here) between the three  
256 DRGs of interest: 62.7 years for procedures aimed at repairing the female genital  
257 apparatus, 56.5 years for cervicocystopexies and 52.9 years for hysterectomies.  
258 These mean ages are in agreement with results in the literature showing that the  
259 peak frequency for urinary incontinence is found at ages ranging from 45 to 64 years  
260 [18].

261 Our work also serves to confirm the near-disappearance of approaches such as the  
262 Burch or Bologna procedures, which have been replaced by cures for urinary  
263 incontinence involving a suburethral tape or sling. Our data are in agreement with  
264 trends recently noted in other countries such as the United States. In a study  
265 methodologically comparable to ours, Oliphant et al. have observed a 46%  
266 diminution between 1979 and 2004 in recourse to Burch-type procedures [17]. On a  
267 parallel track, Oliphant reported a 93% increase in the implementation of SUS-type  
268 procedures. The trend was confirmed in 2002 in an essay by Ward, who showed that  
269 while the respective techniques do not differ in terms of effectiveness, a SUS

270 operation is much simpler to carry out than the Burch procedure [7]. That said,  
271 enthusiasm for SUS may be tempered by results such as those of Fialkow et al, who  
272 observed in a large retrospective cohort a higher rate of re-operation for urinary  
273 incontinence in patients with a sling than in patients having undergone the Burch  
274 procedure [19]. However, a recent meta-analysis reviewing more than 40 randomized  
275 controlled trials and comparing SUS to the Burch technique concluded that the rate  
276 of objective and subjective cure was higher in the SUS patients [20]. Several long-  
277 term follow-up cohort studies have facilitated assessment of the effectiveness and  
278 durability of SUS, and ten years after surgery, 94% of the one-time patients have  
279 declared themselves satisfied with the result [21]. On the other hand, risk of bladder  
280 perforation is 5 times higher with SUS than with Burch [20].

281 As some authors recommend, SUS can be introduced on an out-patient basis [22].  
282 Unfortunately, our study did not enable us to answer questions pertaining to the  
283 possibility of ambulatory care and treatment for urinary incontinence. Boyle has  
284 confirmed the existence of a trend in favor of ambulatory care by showing that in the  
285 United States, instances of this type of treatment doubled between 1994 and 1996  
286 [23]

287 Sixty per cent (60%) of the SUS procedures are carried out in the private sector. This  
288 is slightly higher than the percentage of surgical interventions (55%) carried out in  
289 France in 2008 [24].

290 As regards care for female pelvic organ prolapse, predominance of the vaginal route  
291 and a preference of laparoscopy to laparotomy have been observed. When a urinary  
292 procedure is called for, SUS has remained the most widely used. And as for  
293 hysterectomies, our study confirms the predominance of the vaginal route.

294

295 CONCLUSION

296 Recent literature has demonstrated the equivalent effectiveness, at least in the  
297 medium term, of SUS and Burch colposuspension. However, Burch colposuspension  
298 is still considered the reference technique when it comes to curing female stress  
299 urinary incontinence. Study of contemporary French surgery techniques shows that  
300 less than 1% of today's interventions are carried out according to the above  
301 indication. Ten years after its introduction in France, SUS represents by far the most  
302 widely used type of intervention.

303

304 REFERENCES:

- 305
- 306 [1] Gasquet I, Tcherny-Lessenot S, Gaudebout P, Bosio Le Goux B, Klein P,  
307 Haab F. Influence of the severity of stress urinary incontinence on quality of life,  
308 health care seeking, and treatment: A national cross-sectional survey. *Eur Urol*  
309 2006;50:818-25.
- 310 [2] Hunskaar S, Lose G, Sykes D, Voss S. The prevalence of urinary incontinence  
311 in women in four European countries. *BJU Int* 2004;93:324-30.
- 312 [3] Sykes D, Castro R, Pons ME, Hampel C, Hunskaar S, Papanicolaou S, et al.  
313 Characteristics of female outpatients with urinary incontinence participating in a 6-  
314 month observational study in 14 European countries. *Maturitas* 2005;52:S13-23.
- 315 [4] Burch JC. Cooper's ligament urethrovesical suspension for stress  
316 incontinence. Nine years' experience--results, complications, technique. *Am J Obstet*  
317 *Gynecol* 1968;100:764-74.
- 318 [5] Ulmsten U, Petros P. Intravaginal slingplasty (IVS): an ambulatory surgical  
319 procedure for treatment of female urinary incontinence. *Scand J Urol Nephrol*  
320 1995;29:75-82.
- 321 [6] Delorme E. La bandelette trans-obturatrice : un procédé mini-invasif pour  
322 traiter l'incontinence urinaire d'effort de la femme. *Prog Urol* 2001;11:1306-13.
- 323 [7] Ward K, Hilton P. Prospective multicentre randomised trial of tension-free  
324 vaginal tape and colposuspension as primary treatment for stress incontinence. *BMJ*  
325 2002;325:67.
- 326 [8] Hermieu JF, Denys P, Fritel X. [Étude comparée des recommandations  
327 publiées sur l'incontinence urinaire féminine]. *Prog Urol* 2012;22:636-43.
- 328 [9] Fritel X, Fauconnier A, Bader G, Cosson M, Debodinance P, Deffieux X, et al.  
329 Diagnosis and management of adult female stress urinary incontinence: guidelines  
330 for clinical practice from the French College of Gynaecologists and Obstetricians. *Eur*  
331 *J Obstet Gynecol Reprod Biol* 2010;151:14-9.
- 332 [10] Hermieu JF, Conquy S, Leriche B, Debodinance P, Delorme E, Boccon Gibod  
333 L, et al. Synthèse des recommandations pour le traitement de l'incontinence urinaire  
334 féminine non neurologique . *Prog Urol* 2010;20:S94-9.
- 335 [11] Cado-Leclerc D, Thubert T, Demoulin G, Faivre E, Trichot C, Naveau A, et  
336 al. Diffusion des recommandations pour la pratique clinique concernant l'incontinence  
337 urinaire de la femme. *Prog Urol* 2012;22:233-9.

338 [12] de Tayrac R, Haab F, Madelenat P, Boccon-Gibod L. Répartition des  
339 interventions chirurgicales pour incontinence urinaire d'effort chez la femme à  
340 l'Assistance Publique-Hôpitaux de Paris en 2002-2003. *Prog Urol* 2004;14:521-4.

341 [13] de Tayrac R, Madelenat P. Évolution des différentes voies d'abord  
342 chirurgicales dans l'incontinence urinaire d'effort féminine. *Gynecol Obstet Fertil*  
343 2004;32:1031-8.

344 [14] Fritel X, Pigne A. Anterior repair using Bologna procedure: long-term results  
345 on stress urinary continence. *Int Urogynecol J Pelvic Floor Dysfunct* 2002;13:176-81.

346 [15] Wu JM, Kawasaki A, Hundley AF, Dieter AA, Myers ER, Sung VW. Predicting  
347 the number of women who will undergo incontinence and prolapse surgery, 2010 to  
348 2050. *Am J Obstet Gynecol* 2011;205:230.e1-5.

349 [16] Quan H, Parsons GA, Ghali WA. Validity of procedure codes in International  
350 Classification of Diseases, 9th revision, clinical modification administrative data. *Med*  
351 *Care*. 2004;42:801-9.

352 [17] Oliphant SS, Wang L, Bunker CH, Lowder JL. Trends in stress urinary  
353 incontinence inpatient procedures in the United States, 1979-2004. *Am J Obstet*  
354 *Gynecol* 2009;200:521.e1-6.

355 [18] Shamliyan T, Wyman J, Bliss DZ, Kane RL, Wilt TJ. Prevention of urinary and  
356 fecal incontinence in adults. *Evid Rep Technol Assess* 2007:1-379.

357 [19] Fialkow M, Symons RG, Flum D. Reoperation for urinary incontinence. *Am J*  
358 *Obstet Gynecol* 2008;199:546.e1-8.

359 [20] Novara G, Artibani W, Barber MD, Chapple CR, Costantini E, Ficarra V, et al.  
360 Updated systematic review and meta-analysis of the comparative data on  
361 colposuspensions, pubovaginal slings, and midurethral tapes in the surgical  
362 treatment of female stress urinary incontinence. *Eur Urol* 2010;58:218-38.

363 [21] Olsson I, Abrahamsson AK, Kroon UB. Long-term efficacy of the tension-free  
364 vaginal tape procedure for the treatment of urinary incontinence: a retrospective  
365 follow-up 11.5 years post-operatively. *Int Urogynecol J* 2010;21:679-83.

366 [22] Sivanesan K, Fattah MA, Ramsay I. Transobturator tape as a day surgery  
367 procedure: a case control study. *Int J Surg*. 2007;5:152-4.

368 [23] Boyles SH, Weber AM, Meyn L. Ambulatory procedures for urinary  
369 incontinence in the United States, 1994-1996. *Am J Obstet Gynecol* 2004;190:33-6.

370 [24] Exertier A, Minodier C. Le panorama des établissements de santé. Collection  
371 études et statistiques ed: Direction de la Recherche, des Etudes, de l'Evaluation et

372 des Statistique en Santé; 2010.p.83; <http://www.dress.sante.gouv.fr/IMG/pdf/>  
373 /etabsante2010-4.pdf.

374

375 **Table 1. Distribution of the main urinary incontinence procedures for the Cervicocystopexy DRG.**

Cervicocystopexy DRG (13C171 to 13C174)

DESCRIPTION:	Common name	CCAM code	Public+ESPIC+Private	% Private Activity	
<b>Participants</b>			24387	60,0%	
<b>Mean age (years)</b>			56,49		
<b>Standard deviation age</b>			11,69		
<b>Mean hospital stay (MHS) in days</b>			1,88		
<b>Standard deviation MHS</b>			1,17		
<b>Deaths</b>			1		
<b>URINARY INCONTINENCE PROCEDURE</b>			24464	60,0%	
<b>Cervicocystopexy by sling with vaginal approach</b>	<b>TVT/TOT</b>	Jddb001/JDDA003	97,7%	23821	60,5%
<b>Indirect CCPX of pectineal ligament (Cooper's) by laparotomy</b>	<b>Burch</b>	JDDA002	<1%	132	62,9%
<b>Indirect CCPX of pectineal ligament (Cooper's) by laparoscopy</b>	<b>Burch</b>	JDDC002	<1%	39	30,8%
<b>Direct CCPX with infra-urethral sling by laparotomy, through transvaginal route</b>	<b>Göbell Stöckel</b>	JDDA006	1,1%	274	43,1%
<b>Direct CCPX with infra-urethral prosthetic sling by laparotomy</b>	<b>Sling</b>	JDDA005	<1%	78	29,5%
<b>Direct CCPX with fascial infra-urethral sling by laparotomy</b>	<b>Sling</b>	JDDA004	<1%	27	7,4%
<b>Indirect CCPX with pedunculated vaginal sling by laparotomy and vaginal approach</b>	<b>Bologna</b>	JDDA007	<1%	48	54,2%
<b>Indirect CCPX with vaginal approach and by abdominal route, with endoscopic guidance</b>	<b>Raz</b>	JDDA008	<1%	45	24,4%

376  
377

378 Legend: CCPX, Cervicocystopexy; ESPIC-Etablissement de Santé Privé d'Intérêt Collectif (private health establishment of public interest); CCAM, Classification Commune des Actes Médicaux  
379 (common classification of medical procedures); TVT/TOT, Tension free Vaginal Tape/Trans-Obturator-Tape.

380



381 **Table 2. Distribution of the classifying procedures for the Prolapse repair DRG.**

Prolapse repair DRG (13C041 to 13C044)

	<i>Common name</i>	CCAM code	Public+ESPIC+Private,	
<b>DESCRIPTION:</b>				
Participants				26381
Mean age (years)			62,7	
Standard deviation Age			10,2	
Mean hospital stay (MHS) in days			4,5	
Standard deviation MHS,			2,3	
Deaths			7,0	
<b>CLASSIFYING PROCEDURES</b>				
<i>BY LAPAROTOMY</i>				1879
<i>BY LAPAROSCOPY</i>				12103
<i>BY VAGINAL ROUTE</i>				18274
<b>URINARY INCONTINENCE PROCEDURE:</b>				
<i>Cervicocystopexy by sling with vaginal approach;</i>	<i>TVT/TOT</i>	JDDB001/JDDA003	32,7%	8617
<i>Infraurethral plication with vaginal approach;</i>		JMBA001	4,5%	1182
<i>Bladder support by infra-urethral myoplasty with vaginal approach</i>		JMDA001	1,3%	331
<i>Indirect CCPX of pectineal ligament (Cooper's) by laparoscopy</i>	<i>Burch</i>	JDDC002	<1%	205
<i>Direct CCPX with infra-urethral sling by laparotomy or through tranvaginal route</i>	<i>Göbell-Stöckel</i>	JDDA006	<1%	76
<i>Indirect CCPX of pectineal ligament (Cooper's) by laparotomy</i>	<i>Burch</i>	JDDA002	<1%	66
<i>Direct CCPX with prosthetic infra-urethral sling, by laparotomy</i>	<i>Sling</i>	JDDA005	<1%	57
<i>Indirect CCPX with vaginal approach and by abdominal route, with endoscopic guidance</i>	<i>Raz</i>	JDDA008	<1%	42
<i>Indirect CCPX with pedunculated vaginal sling, by laparotomy and with vaginal approach</i>	<i>Bologna</i>	JDDA007	<1%	25
<i>Direct CCPX with infra-urethral fascial sling, by laparotomy</i>	<i>Sling</i>	JDDA004	<1%	6

382

383

384

*Legend: CCPX, Cervicocystopexy; ESPIC, Etablissement de Santé Privé d'Intérêt Collectif (private health establishment of public interest); CCAM, Classification Commune des Actes Médicaux (common classification of medical procedures); TVT/TOT, Tension free Vaginal Tape/Trans-Obturator-Tape.*

385

386 **Table 3. Distribution of the classifying procedures for the Hysterectomy DRG.**

DRG corresponding to the different hysterectomies (13C031 to 13C034)

DESCRIPTION:	CCAM code	Public+ESPIC+Private	% Private Activity	
Participants		48386	50,3%	
Mean age (years)		52,91		
Standard deviation age		11,41		
Mean hospital stay (MHS) in days		5,35		
Standard deviation MHS,		2,74		
Deaths		18,00		
DISTRIBUTION OF THE SURGICAL PROCEDURES: Percentage of the total number of hysterectomies,				
CLASSIFYING PROCEDURES				
BY LAPAROTOMY		29921	50,4%	
BY LAPAROSCOPY		13041	52,8%	
BY VAGINAL ROUTE		3109	31,4%	
MIXED ROUTE: VAGINAL		5367	43,5%	
URINARY INCONTINENCE PROCEDURE:		6671	60,4%	
Cervicocystopexy by sling with vaginal approach TVT/TOT	JDBB001/JDDA003	9,2%	4443	56,6%
Bladder support by intraurethral myoplasty and vaginal route	JMDA001	<1%	410	73,7%
Subtotal hysterectomy with unilateral or bilateral adnexectomy, with posterior suspension of the uterine cervix and indirect cervicocystopexy of the pectineal ligament by laparotomy	JKFA029	<1%	230	56,5%
Indirect cervicocystopexy (pectineal ligament (Cooper's)) by laparotomy	JDDA002	<1%	187	77,5%
Subtotal hysterectomy, posterior suspension of the uterine cervix (colposuspension) and indirect cervicocystopexy with the pectineal ligament by laparotomy	JKFA012	<1%	162	71,0%
Indirect cervicocystopexy with pedunculated vaginal sling by laparotomy and vaginal route;	JDDA007	<1%	105	45,7%
Indirect cervicocystopexy of the pectineal ligament (Cooper's) by laparoscopy	JDDC002	<1%	67	37,3%
Indirect cervicocystopexy with vaginal approach and by abdominal route, with endoscopic guidance	JDDA008	<1%	62	17,7%
Direct CCPX with infra-urethral sling by laparotomy, or through transvaginal route	JDDA006	<1%	54	18,5%
Direct CCPX with infra-urethral prosthetic sling by laparotomy	JDDA005	<1%	25	52,0%
Direct CCPX with infra-urethral fascial sling, by laparotomy	JDDA004	<1%	10	10,0%

387  
388

389 Legend: CCPX, Cervicocystopexy; ESPIC, Etablissement de Santé Privé d'Intérêt Collectif (private health establishment of public interest); CCAM, Classification Commune des Actes Médicaux  
390 (common classification of medical procedures); TVT/TOT, Tension free Vaginal Tape/Trans-Obturator-Tape.

391

392 **Table 4: Number of cervicocystopexy procedures listed in 2009 according to the ATIH:**

Classification of cervicocystopexy procedures (2009 PMSI database)

	Common name	CCAM code	Public+ESPIC+Private		% Private Activity
			N=42223		
Cervicocystopexy with infra-urethral sling by vaginal route		Jddb001	32929		62,1%
Cervicocystopexy by sling with vaginal approach transcutaneous;	<i>TVT/TOT</i>	JDDA003	6000	38929	60,0%
Indirect cervicocystopexy of the pectineal ligament (Cooper's) by laparotomy	<i>Burch</i>	JDDA002	564		68,4%
Direct cervicocystopexy with infra-urethral sling, by laparotomy and transvaginal route	<i>Göbell-Stöckel</i>	JDDA006	433		42,0%
Indirect cervicocystopexy of the pectineal ligament (Cooper's) by laparoscopy	<i>Burch</i>	JDDC002	330		60,6%
Indirect cervicocystopexy with pedunculated vaginal sling, by laparotomy and with vaginal approach	<i>Bologna</i>	JDDA007	199		48,2%
Direct cervicocystopexy with prosthetic infra-urethral sling, by laparotomy	<i>Sling</i>	JDDA005	196		35,7%
Indirect cervicocystopexy with vaginal approach and by abdominal route, with endoscopic guidance	<i>Raz</i>	JDDA008	184		39,7%
Direct cervicocystopexy with fascial infra-urethral sling, by laparotomy	<i>Sling</i>	JDDA004	54		13,0%
Subtotal HT, posterior suspension of the uterine cervix (colposuspension) and indirect cervicocystopexy of the pectineal ligament, by laparotomy		JKFA012	164		70,7%
Subtotal HT with unilateral or bilateral adnexectomy and with posterior suspension of the uterine cervix and indirect cervicocystopexy of the pectineal ligament, by laparotomy		JKFA029	235		56,6%
Suspension of vaginal dome (Promontofixation) with indirect cervicocystopexy of the pectineal ligament (Cooper's)		JLDA004	257		81,3%
Suspension of vaginal dome (Promontofixation) with direct cervicocystopexy by infra-urethral sling		JLDA003	247		64,4%
Posterior hysteropexy (Promontofixation) with indirect cervicocystopexy of the pectineal ligament (Cooper's)		JKDA002	243		83,5%
Posterior hysteropexy (Promontofixation) with direct cervicocystopexy of the pectineal ligament (Cooper's)		JKDA001	188		80,3%

393

394

395

396

Legend: PMSI, Programme de Médicalisation des Systèmes d'Information (medical information system program); ESPIC, Etablissement de Santé Privé d'Intérêt Collectif (private health establishment of public interest); CCAM, Classification Commune des Actes Médicaux (common classification of medical procedures); TVT/TOT, Tension free Vaginal Tape/Trans-Obturator-Tape.

397