

Use of hormonal intrauterine device and quarterly injection for contraception in adolescents with mental disorders

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Abstract

Objective: To evaluate the continuity and satisfaction rate with contraceptive methods over 12 months in female adolescents with mental disorders (MD).

Material and Methods: Prospective cohort study carried out at a reference center for care for adolescents with MD. Adolescents with mild and moderate MD who opted for the hormonal intrauterine device (IUD) or a quarterly injectable contraceptive were included. Sociodemographic data were collected, such as age, education and gynecological data. Follow-up was quarterly for 12 months, with assessment of symptoms, desire to continue and satisfaction with the use of the quarterly injectable or hormonal IUD.

Results: One-hundred and three adolescents participated in the study, 34 (33%) of whom chose to use the hormonal IUD and 69 (67%) the quarterly injectable with depot medroxy-progesterone acetate (DMPA). After 12 months, 26 adolescents (76.5%) continued to use the IUD and 34 (49.3%) maintained the use of DMPA. During IUD follow-up, one teenager (2.9%) wanted to have it removed after three months, three (8.8%) developed spontaneous expulsion of the IUD and four (11.7%) were lost to follow-up. Regarding satisfaction after 12 months of use, of the 30 who maintained the method, 29 (96.6%) adolescents were satisfied. Among the 69 adolescents who chose to use DMPA, after 12 months of follow-up, 34 (50.7%) said they were satisfied. Among the 30 (44.7%) who discontinued use, the most frequent causes were irregular bleeding and weight gain. When comparing the two methods, a significant difference was demonstrated for IUD users in terms of continuity ($p=0.0001$), and satisfaction ($p=0.00002$).

Conclusion: Adolescents using the IUD exhibited significantly higher rate of continuity and reported greater satisfaction at 12 months compared to DMPA users. This result corroborates evidence of the preference for long-acting reversible methods for adolescents, especially for those who are most vulnerable. [J Turk Ger Gynecol Assoc. 2026; 27(3): 165-72]

Keywords: Adolescent, mental disorders, contraception, hormonal intrauterine device, depot medroxy-progesterone acetate, satisfaction

Received: February 16, 2026 **Accepted:** July 1, 2026 **Publication Date:** September 04, 2026

Introduction

Teenage pregnancy is a complex phenomenon, which involves multiple dimensions of human life and is directly related to the sociocultural, economic and political context, as well as ethnic-

racial and gender dimensions (1). In clinical practice, health professionals may encounter adolescents and young people with physical, intellectual and developmental disabilities in approximately 8.4% of consultations. For young people with physical and developmental disabilities, puberty and the



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DOI: 10.4274/jtgga.galenos.2026.2026-2-7

Cite this article as: Cezimbra GSS, Araujo Júnior E, Torloni MR, Guazzelli CAF. Use of hormonal intrauterine device and quarterly injection for contraception in adolescents with mental disorders. J Turk Ger Gynecol Assoc. 2026; 27(3): 165-72



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beginning of menstruation can be accompanied by complaints such as abnormal bleeding, dysmenorrhea and premenstrual syndrome, in addition to difficulties with managing menstrual hygiene (2).

Pregnancy in adolescents with mental disorders (MD) occurs unintentionally almost all of the time. The presence of impulsivity, the lack of planning and behavioral control, added to the difficulty in regularly using contraceptives, makes this risk even greater (3). Furthermore, drug interactions may occur between hormonal contraceptives and some psychotropic drugs, which reduce the contraceptive effectiveness (4). The use of some of these medications during pregnancy may have a teratogenic effect, increasing the risk of prematurity and other fetal disorders (5).

Patients with MD may exhibit specific difficulties that increase the risk of failure or discontinuity in the use of contraceptive methods, such as dependence on another person to remember or the need for psychiatric hospitalization, which can lead to the interruption of contraceptive practice (6). Among the most used contraceptive methods in adolescents with MD are the quarterly injectable depot medroxy-progesterone acetate (DMPA), and long-acting reversible contraceptives (LARCs), such as hormonal and non-hormonal intrauterine devices (IUD) and subcutaneous implants (2). Surgical methods (sterilization) and the use of male condoms by the partner are also used (6).

LARCs are safe and appropriate contraceptive methods for most women and adolescents, including those with MD. Guidance suggests the use of these methods as the first choice for this population due to their high effectiveness, with failure rates of less than 1% per year. These contraceptives have the highest satisfaction and continuity rates among all reversible contraceptive methods (7). Currently, the literature has few studies regarding reproductive planning/contraception in this group (8). Therefore, this study sought to contribute to discussions about primary care for this population, helping to fill this knowledge gap.

The main objective of this study was to evaluate the continuity and satisfaction rate with the use of hormonal IUD and quarterly DMPA for 12 months in adolescents with MD.

Material and Methods

A prospective cohort study was carried out with adolescents with MD, followed for 12 months in a reference center for care for adolescents with MD, in Brasília, Federal District, DF, Brazil. Ethics committee approval was obtained from the Research Ethics Committee of UNIFESP - Hospital São Paulo - University Hospital, São Paulo, Brazil (approval no: 2.659.135; CEP/UNIFESP project no: 0286/2018; date: May 16, 2018). Adolescents with MD who were being monitored, who had started sexual activity,

in need of contraception and who agreed to participate in the study were included. All the adolescents who participated had MD of mild to moderate intensity, including: depression; anxiety; bipolar mood disorder; mild to moderate cognitive impairment; obsessive-compulsive disorders; and others. The authorization of guardians and adolescents was carried out through the terms of consent and assent respectively. All adolescents participated in an information group about contraceptive methods and, in this way, were able to freely choose the method they preferred. Those who chose the hormonal IUD and the quarterly DMPA injectable were invited to participate in the study. An initial questionnaire was applied collecting sociodemographic and gynecological data at the reference center, as well as information regarding the MD and medications being used.

The hormonal IUD used was the one containing 52 mg of levonorgestrel. The IUD insertion in the adolescents occurred at the gynecology outpatient clinic by an experienced examiner, without the use of sedation or local anesthesia, in accordance with the manufacturer's technical recommendations. The adolescents were previously prepared for the insertion procedure and showed good tolerance to pain or discomfort. There were no difficulties or complications during the procedures. The quarterly injection with 150 mg of DMPA was administered every 3 months by the examiner, concomitantly with mental health follow-up consultations at the reference center.

Adolescents using both methods were instructed to return every 3 months for 12 months. At each consultation, symptoms, satisfaction and willingness to continue using the method were assessed using a follow-up questionnaire and simple and direct questions. Patient weight recording and gynecological examination were also carried out during follow-up. Previous data concerning continuity of use and satisfaction with the DMPA method have been published previously by our group (9).

Although cohort studies are a quantitative method, no specific previous studies were found on the use of these two contraceptive methods in an adolescent population with MD receiving outpatient care, which gives the research an exploratory character, which justifies the sample size.

Statistical analysis

Statistical analysis was performed using the SAS platform (Cary, NC, USA). Initially, descriptive analyses were applied to characterize the sample. Categorical variables were expressed as absolute and relative frequencies (n and %), while continuous variables were described using measures of central tendency (mean) and dispersion (standard deviation), according to the data distribution. The normality of continuous variables was verified using the Kolmogorov-Smirnov test.

For comparison between groups (IUD and injectable) regarding categorical variables, Pearson's chi-square test was used or, when necessary, Fisher's exact test. For continuous variables, Student's t-test for independent samples (in the case of normal distribution) or the Mann-Whitney U test (for non-parametric distributions) were used. The analysis of the continuity rate of contraceptive methods over 12 months was performed using the Kaplan-Meier survival analysis technique, with comparison between groups using the log-rank test. The significance level adopted was 5% ($p < 0.05$).

Results

One hundred and three sexually active adolescents who needed some safe contraceptive methods were included in the study. Of these, 69 (67%) adolescents chose to use the DMPA and 34 (33%) the hormonal IUD. During the study, 30 (88%) of those who chose the hormonal IUD and 57 (82.6%) of those who chose DMPA used psychiatric medications.

The age of the 103 adolescents, when they started using the method, varied between 14 and 18 years old, with an average of 15.8 years old. Among the 69 DMPA users, the average age was 15.5 years and those who used hormonal IUD ($n=34$) was 16.5 years, which represents a significant difference between the two groups ($p=0.02$).

The average age at menarche of all adolescents was 11.6 years and that of sexual initiation was 14.2 years, and comparing the two groups, there was no difference for either variable ($p=0.65$ and $p=0.19$, respectively) (Table 1).

Among the data collected, we observed a high rate of academic delay (lag between year completed and age), represented by the low number of years of study. The two groups were similar in relation to this characteristic. Another notable fact was the high incidence of sexual violence in both groups, identified in 49.5% of all adolescents and similar between the two groups ($p=0.17$). Previous pregnancy in patients who chose the IUD was significantly higher ($p=0.0001$) than in patients who chose the DMPA (Table 1).

The most frequent MD in the studied population were depression 41 (39.8%), anxiety 19 (18.4%), intellectual disability 16 (15.5%), attention-deficit/hyperactivity disorder 14 (13.6%), bipolar affective disorder 13 (12.6%), and attempted self-extermination and self-mutilation 13 (12.6%). It is important to highlight that 73% of the adolescents had two or more psychiatric diagnoses, and their treatment included more than one type of psychiatric medication. Medications were used by 87 girls (85.4%), similarly between the two groups, with the most frequent medications being fluoxetine, valproic acid, methylphenidate, lithium, escitalopram and carbamazepine.

Table 1. Sociodemographic, gynecological, and mental disorder characteristics of adolescents using depot medroxyprogesterone acetate (DMPA) and hormonal intrauterine device (IUD)

Feature	Total 103		DMPA: 69		IUD: 34		Probability
	Mean	SD	Mean	SD	Mean	SD	p-value
Menarche (age)	11.6	1.46	11.3	1.18	11.1	0.23	0.659 ^(ST)
Sexual initiation (age)	14.2	1.65	13.8	0.18	13.6	0.32	0.1982 ^(ST)
Start of use of the method (age)	15.8	1.10	15.5	0.1	16.5	0.2	0.0206 ^(ST)
Feature	Total: 103		DMPA: 69		IUD: 34		p-value
	n (%)		n (%)		n (%)		
Education							
≤9 years of study	43 (40.2%)		31 (44.9%)		12 (35.2%)		0.9331 ^(QS)
>9 to 12 years of study	60 (59.8%)		38 (55.1%)		22 (64.8%)		
Previous pregnancy							
None	89 (80.1%)		68 (98.5%)		21 (61.7%)		0.0001 ^(EF)
One	14 (19.8%)		1 (1.5%)		13 (38.2%)		
Sexual violence							
Yes	51 (49.5%)		34 (49%)		17 (50%)		0.1716 ^(QS)
No	51 (49%)		35 (51%)		16 (47%)		
Data ignored	1 (1.5%)		0 (0%)		1 (3%)		
Treatment of mental disorder							
Medicated	87 (85.4%)		57 (82.6%)		30 (88.3%)		0.8113 ^(EF)
Psychotherapy only	16 (14.5%)		12 (17.4%)		4 (11.7%)		

ST: Student's t-test, QS: Chi-square test, EF: Exact of Fisher test, SD: Standard deviation

ST: Student's t-test, ^{QS}: Chi-square test, ^{EF}: Exact of Fisher test, SD: Standard deviation

In the present study, adolescents presented significantly different bleeding patterns between the two groups. These differences were probably due to the higher rate of unfavorable bleeding (prolonged or frequent) in the group of DMPA users. Amenorrhea was recorded in 56.7% of the adolescents in both groups and changes in the bleeding pattern, such as amenorrhea and improvement in dysmenorrhea, were well accepted by the adolescents and their caregivers (Table 2).

The other side effect was weight gain, which occurred in a significantly higher proportion of DMPA users after 12 months ($n=36$; 53.7%), while in adolescents with hormonal IUD the gain was recorded in only 4 (11.7%) (Table 2). The average weight gain was 6.8 kg for the first group and 5.5 kg for the second. This was another reason that generated dissatisfaction and contraceptive cessation by many adolescents using DMPA. After 12 months, of the 103 adolescents, 60 (62.6%) continued to use one of the methods (Table 3). Comparing continuation rates after this period, the number of adolescents who maintained the hormonal IUD was significantly higher than the number who continued to use DMPA. Only 1 (2.9%) of the group that opted for the hormonal IUD wanted to remove it after 3 months. Of this same group, 3 (8.7%) had their hormonal IUD expelled twice (they had a new attempt), and there was a loss to follow up of 4 adolescents (11.8%) who did not return for appointments. Regarding continued use of DMPA, 33

adolescents (47.8%) stopped using it and 2 (2.9%) abandoned the study.

In terms of user satisfaction after 12 months, of the 103 adolescents, 66 (64%) of them were satisfied (Table 3). Regarding the use of DMPA, approximately half of the adolescents ($37=53.7\%$) were satisfied. Among those who stopped, the most common reasons for stopping were irregular bleeding and weight gain. With the use of the hormonal IUD, most of them ($29=85.3\%$) were satisfied and, of these, 22 (64.7%) mentioned the desire to keep it for the duration of its validity (8 years) due to its convenience, reduction of dysmenorrhea and menstrual flow. The three adolescents who experienced early expulsions reported their satisfaction and their desire to maintain the method. Of the 34 who started the study, only one teenager reported dissatisfaction and wanted to withdraw before 3 months.

Discussion

Our data demonstrate a delay between start of sexual activity and the introduction of contraception use in this population. The average age of sexual initiation for the adolescents in the studied group was 14.2 years and the start of using contraceptive methods was after 1 to 2 years. The literature, similarly, also reports that adolescents with MD, despite undergoing many

Table 2. Characteristics of the bleeding pattern according to the classification of Belsey and weight changes after 12 months of use of depot medroxyprogesterone acetate (DMPA) and hormonal intrauterine device (IUD) and comparison between the two groups

Signs and symptoms	Total 97		DMPA 67		IUD 30		p-value
	n	%	n	%	n	%	
Bleeding pattern (chi-square test)							<0.0001 ^(QS)
Amenorrhea	55	56.7	37	55.2	18	60	
Infrequent bleeding*	15	15.4	8	11.9	7	23.3	
Prolonged or frequent bleeding**	24	24.7	22	32.8	2	6.6	
Standard bleeding***	5	5.8	2	2.9	3	10	
Data unavailable	6	5.9	2	2.9	4	11.8	
Weight increase (exact of Fisher test)	n	%	n	%	n	%	<0.0001 ^(EF)
Number of teenagers	40	41.2	36	53.7	4	13.3	
<2 kg	9	22.5	9	22.5	0	0	
From 2 to <5	11	27.5	8	20	2	5	
From 5 to <10 kg	12	30	11	27.5	1	2.5	
>10 kg	8	20	7	17.5	1	2.5	

^{QS}: Chi-square test, ^{EF}: Exact of Fisher test
 *Infrequent bleeding: 2 or fewer times in 90 days. **Prolonged or frequent bleeding: more than 5 times or lasting 14 days or more in 90 days. ***Standard bleeding: 3 to 5 times in 90 days (29)

Table 3. Continuity and satisfaction rates in the use of depot medroxy-progesterone acetate (DMPA) and hormonal intrauterine device (IUD) after 12 months of follow-up and comparison between the two groups

Continuity rate Kaplan-Meier test*							
Months of use of the method	Total		DMPA		Hormonal IUD		Comparison
	n	%	n	%	n	%	p-value
3	92	89.3	59	85.5	33	97.1	0.000181 ^(KM)
6	85	82.4	57	82.6	28	82.3	
9	72	72.3	45	65.2	27	79.4	
> 12	60	62.6	34	49.3	26	76.6	
Drop out***	6	7.45	2	2.9	4	12	
Satisfaction rate Fisher's exact test**							
	n	%	n	%	n	%	p-value
Satisfied	63	64.9	34	50.7	29	96.6	0.0000164 ^(EF)
Dissatisfied	34	35	33	49.3	1	3.3	
Drop out***	6	6.1	2	2.9	4	11.7	
*Kaplan-Meier test ^(KM) was applied, with significance level adopted was 5% (p<0.05)							
**Fisher's exact test ^(FE) was applied, which presented evidence that the satisfaction rates of both groups are different, with a significance of 99%, in favor of the group that opted for the hormonal IUD							
***Adolescents who abandoned the study (drop out) were not considered in the satisfaction assessment							

medical and psychological consultations, do not receive guidance on contraception (10,11).

The difference in the number of adolescents between the groups is mainly due to respect for the universal right to choose a contraceptive method granted to individuals. Several factors may have influenced the choice of method, such as lack of information, fear of IUD insertion, and the myth that it should not be used in women who have not been pregnant. This can be observed by the higher frequency of previous pregnancies (38.2%) among the teenagers who opted for the IUD, in addition to the higher average age in this group, which may be associated with a greater perception of risk and the need for a safe and long-lasting contraceptive method.

Considering the increased impulsivity and impairment of criticism, which frequently occur in a series of psychiatric disorders and neurological diseases, the reproductive risk is increased for this group of adolescents, often associated with some sexually transmitted disease (12,13). During the study there were no pregnancies, but five teenagers who stopped using the methods early became pregnant without planning. A Brazilian study with 255 women, including adolescents and adults with MD, found that 94.2% were not receiving specific medical attention about contraception. In this evaluation, 91% of women reported an active sexual life and among those who used some contraceptive method, 77.2% did it incorrectly (6). An American cohort study with 13,059 adult and adolescent women with intellectual or developmental disabilities, only

4.1% used LARCs and 29.8% used other moderately effective methods (14).

Women with MD present with specific problems that increase the risk of failure or discontinuity in the use of contraceptive methods (6). Therefore, contraceptive methods that do not require the woman's control are the most effective for them, with the most widely recommended being the hormonal IUD, subcutaneous implants and DMPA (2). DMPA has been indicated for women with MD due to its high efficacy, ease of dosing, improvement of dysmenorrhea and other symptoms (15). There is also a possible benefit in relation to the reduction of epileptic seizures (2). In this study, most adolescents opted for the quarterly injectable (67%).

Regarding the continued use of the methods, of the total of 69 adolescents who started using DMPA, only 49.3% of them maintained the use of the injectable for one year or more. This rate was also confirmed by adolescents without MD, participants in the CHOICE Project, where it was observed that among those who used DMPA for 12 months, the continuation rate was 47.3% (16). In our study, the most common reasons of early abandonment of this method among adolescents were menstrual irregularities (43.4% of adolescents) and weight gain (50.7%), similar to data observed in the literature (16-20).

The fact that half of the adolescents discontinued DMPA use impacted the study's results, which concluded, after 12 months of follow-up, that the number of participants in both groups was similar. These data support the recommendation of LARCs

as the first option for adolescents, especially those with mental health disorders.

According to other studies, weight gain may be more pronounced in women with pre-existing obesity/overweight before treatment initiation (21-24). The literature reports that women with MD using DMPA, when compared to those treated with non-hormonal contraceptives, may experience a greater increase in weight and body fat, which can be a major problem for those using psychotropic medications also associated with this effect (15). Logistic regression analysis was performed for the relationship between weight change and the medications used, but no significant differences were identified in our cohort.

Regarding bleeding patterns, a similar percentage was observed between the two methods, as well as the psychiatric medications used, which were similar in both groups. The report of depression, present in both groups, was evaluated by the mental health team and was not directly related to the use of contraceptive methods, but rather to the pre-existing psychiatric condition.

The incidence of amenorrhea among adolescents who used DMPA in this study was 54%, considered a positive effect by both them and their caregivers, due to the difficulties in managing menstrual hygiene. The literature points to different results, as it shows that among adolescent users with special needs, DMPA suppresses menstruation and provides effective contraception, leading to amenorrhea in up to 90% of women after the fourth dose (12 months) (2). The incidence rate of amenorrhea among adolescents who used the hormonal IUD was similar (52.9%). Studies investigating its use in adolescents with developmental disabilities have reported amenorrhea rates of up to 70% and low rates of expulsion and removal due to bleeding or pain (2). On the other hand, a study over 5 years, with 300 adolescents with intellectual disabilities and an average age of 12.1 years, reported a gradual decrease in the use of DMPA, which went from 59% to 17.8%, while there was an increase in the use of hormonal IUD, increasing from 2.8% to 19.2% (25).

Considering the presence of MD and the average age of the participants (16.1 years), the 76.6% rate of continuity of use in 12 months of hormonal IUD use in this study can be evaluated as good. A similar result was found in a recent systematic review with women and adolescents without other diseases (26). In another study, published in 2020, which evaluated the use of hormonal IUD in 159 nulliparous patients with physical, intellectual or developmental disabilities, a high rate of continuity (95%) of the method within 1 year was also reported. In this study, it was noteworthy that the majority of insertion procedures (96%) were performed in a surgical center (27). Some studies reported that one of the disadvantages of using

hormonal IUD is their cost and the need for hospitalization for insertion, with general anesthesia (25,27). However, in the present study, the insertion was carried out in an outpatient clinic and without sedation, which appears to be a major difference. During or after insertion of the hormonal IUD, there were no complications or mention of severe pain by the patients. Outpatient insertion minimizes costs and makes this method much more accessible, even facilitating logistics for the healthcare team, family and caregivers. It is possible that reassurance prior to insertion, in a simple and understandable way for the adolescents who opted for this method, in addition to the environment, which was the gynecology outpatient clinic with which they were already familiar, contributed to facilitating the process. In any case, it is important to highlight that training professionals for the correct and safe insertion of the device is necessary to care for this population.

The results of this study with adolescents with MD demonstrated higher rates of continuity of contraceptive use and satisfaction among hormonal IUD users. This result is in line with the data presented by a study carried out with women with bipolar disorder, which compared the rates of continuity, complications and psychiatric hospitalizations between the methods used. The authors reported that women with an IUD (TCu 380-A, 86%; hormonal IUD, 87%) had a continuation rate of use 31% ($p < 0.0001$) higher than those who opted for the quarterly injectable. Furthermore, no differences were observed in the number of hospitalizations for bipolar disorder or depression between the contraceptive groups evaluated (28).

The data from the present study corroborate those in the literature, in which a hormonal IUD is considered as the first option for adolescents with MD due to its effective, comfortable, safe, long-term contraception and good bleeding control. There were no limitations to its use related to drug interactions and the multiple comorbidities frequently associated with it, such as endocrine and metabolic diseases, obesity, attention and cognitive deficits, factors that make the use of other contraceptive methods difficult.

Considering depot DMPA, which, despite the widely proven adverse consequences in the literature, has been widely used for decades, in contrast to the various benefits and few adverse effects of the hormonal IUD, there is a perceived need to make this technology available for reproductive planning in the public health system, especially in vulnerable populations.

Based on our results, and considering those existing in the literature, a protocol proposal will be developed so that the hormonal IUD can be offered to the adolescent population with MDs in the public health system, when there is a need or risk of unplanned pregnancy. Given the lack of recognition of their needs by health professionals and reproductive planning services, we realize the importance (and urgency) of expanding care, including information on the sexual and reproductive

specificities of these adolescents. In addition, expanding access to modern contraceptive methods, in cases where safe, reversible and long-lasting contraception is indicated and can benefit many people with MDs, as well as their families and society should also be promoted.

Offering the IUD among the available contraceptive options and incorporating practical strategies into care, such as careful explanations about the method, as well as about the IUD insertion procedure, combined with good follow-up of adolescents, will allow for better adherence to contraceptive use and acceptance of the discomfort of outpatient insertion. Furthermore, routine counseling and resolution of potential adverse events may increase continuation rates and satisfaction among adolescents who are new users of LARC methods.

Study limitations

This study has limitations in relation to the fact that some adolescents with MD may have difficulties expressing themselves and understanding which contraceptive method is most appropriate for them. This fact could explain the higher discontinuation rate after 12 months.

Another limitation was the difficulty in evaluating outcomes by subgroup of MDs, mainly due to the fact that most adolescents had two or more psychiatric diagnoses, and their treatment included more than one type of psychiatric medication.

The limitations for replicating this experience in the public health system, both in services that serve adolescents with MDs and in Basic Health Units, lie in the unavailability of the hormonal IUD for insertion as a contraceptive option for this vulnerable population.

Conclusion

There was a notable delay in the introduction of the use of contraception after start of sexual activity for the population of adolescents with MD, which demonstrated a lack of specific attention in terms of reproductive planning for this group. Considering the features of female adolescents with MD and the greater difficulty in using contraceptive methods, we concluded that there was a good rate of continuity and satisfaction after 12 months with the use of the hormonal IUD compared to the use of the quarterly injectable. The presence of irregular bleeding and weight gain were the most common causes of abandonment of the injectable method.

Ethics

Ethics Committee Approval: Ethics committee approval was obtained from the Research Ethics Committee of UNIFESP - Hospital São Paulo - University Hospital, São Paulo, Brazil (approval no: 2.659.135; CEP/UNIFESP project no: 0286/2018; date: May 16, 2018).

Informed Consent: All participants signed the consent form.

Footnotes

Author Contributions: Surgical and Medical Practices: G.S.S.C., Concept: C.A.F.G., Design: C.A.F.G., Data Collection or Processing: G.S.S.C., M.R.T., Analysis or Interpretation: M.R.T., Literature Search: E.A.J., Writing: E.A.J.

Conflict of Interest: No conflict of interest is declared by the authors.

Financial Disclosure: The authors declared that this study received no financial support.

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