Antegrade versus retrograde common iliac artery revascularization and occurrence of erectile dysfunction

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AIM: *To assess the effect of antegrade and retrograde common iliac artery (CIA) revascularization on erectile dysfunction (ED) using the validated International Index of Erectile Function (IIEF) questionnaire, on patients treated for chronic occlusions of the CIA.*
MATERIALS AND METHODS: *Clinical data of patients who were submitted either to endovascular CIA revascularization (group A) or to femoral-femoral crossover bypass (group B) due a unilateral total occlusion of the CIA between 01/2015 and 12/2019 were retrospectively analyzed. Primary outcomes included the evaluation of ED using the IIEF questionnaire, before and 30 days after the operation. A P value <0.05 was considered statistically significant.*
RESULTS: *A total of 33 patients underwent endovascular (14 patients, group A) or surgical treatment (19, group B) Before the operation, no differences were recorded in the occurrence of ED between the two groups, neither in the results of the IIEF questionnaire. After the intervention, patients of group A performed significantly better than those of group B in terms of IIEF questionnaire (18 ± 10.1 versus 12.1 ± 14.8, P=0.01). Age and COPD were negatively correlated with the preoperative results of the IIEF questionnaire (OR 0.049, 95%CI 0.02-0.05, P<0.001 and OR 0.29, 95%CI 0.01-0.56, P=0.03, respectively) and the postoperative results of the IIEF questionnaire (OR 0.02, 95% CI 0.01-0.04, P<0.001, and OR 0.46, 95% CI 0.17-0.75, P=0.001, respectively).*
CONCLUSIONS: *Patients who were submitted to endovascular antegrade revascularization for occlusion of the CIA performed significantly better in terms of IIEF questionnaire than those who underwent surgical femoral-femoral crossover bypass and therefore retrograde HA revascularization.*

KEY WORDS: Common iliac artery occlusion, Erectile dysfunction, Femoro-femoral bypass, Iliac artery angioplasty, IIEF-5.

Introduction

Erectile Dysfunction (ED) represents a major issue worldwide, and its incidence is destined to increase as the population ages [1,2].

Causes of ED are often of multifactorial etiology, including psychological conditions and drugs [2-4]. Nevertheless, in men aged more than 50 years, organic causes are the most represented, and among all, vascular causes are the main responsible for organic ED [5]. In particular, occlusions of iliac and pelvic arteries supplying blood to the penis, may lead to an inability to get a satisfactory erection [6].

However, male patients affected by chronic iliac occlusions complain more often for buttock claudication or critical limb ischemia rather than for pelvic claudication, with a possible consequent underestimation of the occurrence of ED in these population. Based on the pub-

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ABBREVIATION

CIA: common iliac artery
ED: erectile dysfunction
IIEF: International Index of Erectile Function
COPD: Chronic Obstructive Pulmonary Disease
OR: Odds Ratio
CI: Confidence Interval
HA: Hypogastric Artery
CO: Chronic Occlusion
FFCB: femoral-femoral crossover bypass
BMI: body mass index
PD5-I: Phosphodiesterase-5 inhibitors

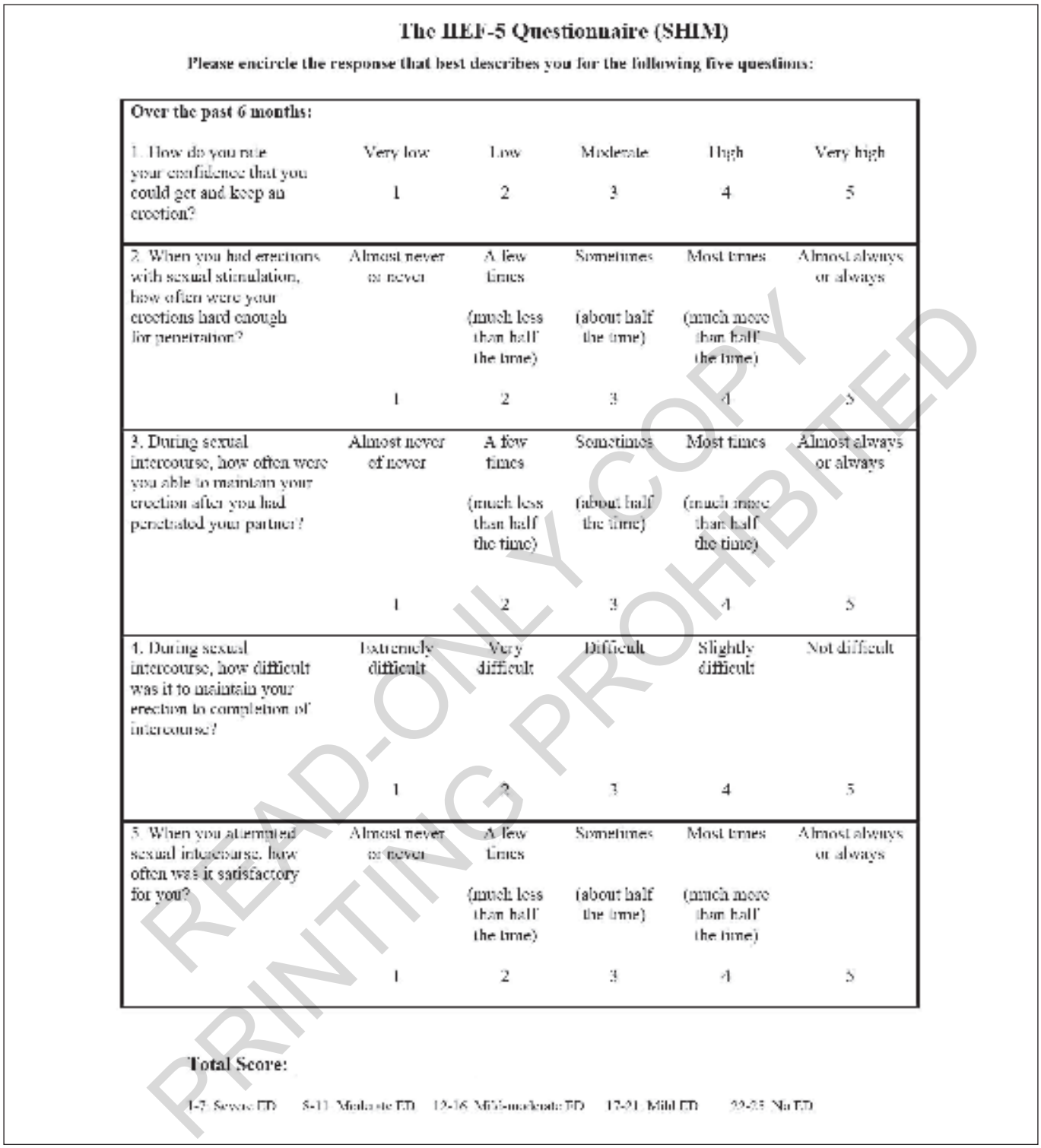
lished literature, the incidence of sexual dysfunction has been reported to be 74% in patients with common iliac arteries (CIA) occlusive disease [5].
In these cases, the blood flow restoration of iliac axes may have a positive impact also on erectile function.
Chronic occlusions (CO) of the CIA leading to disabling claudication or critical limb ischemia can be faced either through surgical or through endovascular approach.
In the first case, one of the options is represented by the performance of a femoral-femoral cross-over bypass, which restores an antegrade flow to the affected leg and a retrograde flow to the ipsilateral hypogastric artery (HA). In the recent years, however, endovascular techniques have gained wide acceptance as a safe and effective alternative to surgery and have become the first choice whenever possible due to their less invasiveness [7,8]. When the CO of the CIA is managed through an endovascular approach, an antegrade flow is restored on both the affected leg and the ipsilateral HA.
No studies in the literature up to now have compared the impact of these two techniques on ED, when treating patients for intermittent claudication or critical limb ischemia.
Aim of the study was then to assess the effect of antegrade and retrograde HA revascularization on ED using the International Index of Erectile Function (IIEF) questionnaire, on patients who were treated for either intermittent claudication or critical limb ischemia due CO of the CIA with preserved patency of the HA.

Materials and Methods

Ethical approval was obtained for this research on September 16th, 2020 (167/int/2020), from our referral Ethics Committee.

Patients' Clinical Data

Clinical data of patients who were submitted either to endovascular CIA revascularization (group A) or to femoral-femoral crossover bypass (FFCB, group B) for either disabling claudication or critical limb ischemia due to a CO of the CIA with preserved patency of both the ipsilateral and the contralateral HA between 01/2010 and 12/2019 were retrospectively collected and analyzed.
Patients were retrospectively included in the study after evaluation by vascular surgeons and urologist with expertise in sexual disorders, to confirm a possible vascular cause for their ED from data available on medical records. Patients who presented with bilateral CIA occlusions or who had occlusion of one or both HA were excluded, as well as patients who were treated for external iliac artery occlusions, for iliac stenosis or who had a unilateral CIA occlusion with a significant stenosis of the contralateral axis.
Clinical data included age, body mass index (BMI), the Rutherford's classification of the peripheral arterial disease, the presence of cardiovascular risk factors (diabetes mellitus, defined as fasting glucose levels > 100 mg/dL or the intake of at least one drug to control the serum glucose levels; hypertension, defined as a systolic pressure >140 mmHg and/or a diastolic pressure >90 mmHg, or as the intake of at least one drug to control blood pressure; dyslipidemia, defined as a total cholesterol level > 200 mg/dL or the intake of statins; smoking habits, defined as current or past smoker versus no smoker; coronary artery disease; chronic renal failure, defined as an estimated Glomerular Filtration Rate < 60 mL/min/1,73m^2; chronic obstructive pulmonary disease), and the intake of beta-blocker drugs.
Primary outcomes included the evaluation of ED using the IIEF Questionnaire, before and 30 days after the operation, and the need for Phosphodiesterase-5 inhibitors (PD5-I) intake, comparing both groups.
The IIEF-5 is a validated questionnaire based on 5 questions (IIEF-5) used to self-evaluate the erectile function (items 1, 2, 3 and 4) and sexual satisfaction (item 5) (Fig. 1) [9].
The IIEF-5 index ranges from 5 to 25. Based on the possible scores of the IIEF-5 ED is classified into five categories: severe (5 – 7), moderate (8 – 11), mild to moderate (12 – 16), mild (17 – 21), and no ED (22 – 25) [10,11]. The IIEF-5 was part of the clinical evaluation of our cohort of patients.
Secondary outcomes included the occurrence of death during the follow-up and the patency of the bypass graft/the iliac stent.
Data of the 30-days follow-up were obtained from clinical outpatient visit including IIEF-5, while data about death and the patency of the graft were collected from clinical outpatient visit (per protocol at 3 months, 6 months and 12 months after the operation and annually thereafter) and from telephone interview.



The IIEF-5 Questionnaire (SHIM)

Please encircle the response that best describes you for the following five questions:

Over the past 6 months:					
1. How do you rate your confidence that you could get and keep an erection?	Very low 1	Low 2	Moderate 3	High 4	Very high 5
2. When you had erections with sexual stimulation, how often were your erections hard enough for penetration?	Almost never or never 1	A few times (much less than half the time) 2	Sometimes (about half the time) 3	Most times (much more than half the time) 4	Almost always or always 5
3. During sexual intercourse, how often were you able to maintain your erection after you had penetrated your partner?	Almost never or never 1	A few times (much less than half the time) 2	Sometimes (about half the time) 3	Most times (much more than half the time) 4	Almost always or always 5
4. During sexual intercourse, how difficult was it to maintain your erection to completion of intercourse?	Extremely difficult 1	Very difficult 2	Difficult 3	Slightly difficult 4	Not difficult 5
5. When you attempted sexual intercourse, how often was it satisfactory for you?	Almost never or never 1	A few times (much less than half the time) 2	Sometimes (about half the time) 3	Most times (much more than half the time) 4	Almost always or always 5

Total Score:

1-7: Severe ED 8-11: Moderate ED 12-16: Mild-moderate ED 17-21: Mild ED 22-25: No ED

Fig. 1 : The international index of erectile function (IIEF) questionnaire.

Endovascular and Open Surgical Procedures

All patients before the procedures underwent a computed tomography angiography of the abdomen, in order to assess the iliac occlusion and to evaluate the status of the pelvic circulation.

Indications for either endovascular or open surgical procedures were given according to anatomic criteria (i.e. open surgical procedures for long and very calcified occlusion of the CIA).

The endovascular procedures were performed under local anesthesia and through a retrograde puncture of the com-

mon femoral artery, using a 6 or 7F short sheath. When the lesions were overcome, through either sub-intimal or intraluminal approach using a hydrophilic 0.035" guide, an aortography was performed for the road-map of the iliac axis. Primary stenting followed by balloon post-dilatation was therefore performed, until a satisfying result was demonstrated at the final angiogram and no difference was recorded between the radial and the femoral artery pressure using invasive measurement.
The surgical procedures were performed under either sub-arachnoid or general anesthesia, through a bilateral longitudinal cut-down with isolation of both femoral artery bifurcations. Before systemic heparinization, the supra-pubic tunnel was prepared to accommodate the passing of the tubular graft. Therefore, the prosthesis (usually PTFE) was anastomosed on both the donor and the receiving femoral arteries in a terminal-lateral fashion, using a 6/0 polypropylene continuous suture.
After the procedures, all patients of both groups were discharged on a single antiplatelet therapy, unless they were on a dual antiplatelet therapy for other medical causes.

Statistical Analysis

All collected data were inserted in a database and analyzed as appropriate using the software STATA-IC®. Continuous variables are reported as mean±2 standard deviation for normally distributed variables, or median and interquartile range (IQR) for non-gaussian values; categorical variables are presented as number (percentage).
Chi-square and T-tests were used as appropriate to compare variables. Logistic regression analysis was performed to assess any variable that could be associated with the occurrence of ED, as well as any factor affecting the results of the IIEF questionnaire, both before and after surgery. Odds Ratios (OR) along with 95% Confidence Interval (CI) and the coefficient of correlation (R) were reported for the results of the logistic regression. A P value <0.05 was considered statistically significant.

Results

A total of 61 patients in the examined period underwent either femoral-femoral crossover bypass or iliac angioplasty and stenting for a CO of CIA. Complete data, however were available only for 33 of these patients, who were included in the study.
In particular, CIA angioplasty and stenting was performed in 14 patients (group A). In the remaining 19 patients, the FFCB was performed (group B) using a prosthetic graft (PTFE) in all cases.
As described in (Table I), about a third of patients had disabling claudication (Rutherford's class III) and most patients presented with critical limb ischemia and in particular with rest pain (Rutherford's class IV). Most patients of both groups were affected by hypertension (50% in group A and 78.9% in group B, P=0.08) and dyslipidemia (64.3% of group A and 52.6% of group B, P=0.51). Moreover, all patients of group A and 84.2% of the patients in group B were current or past smokers (P=0.71). Patients of group A were younger than those who underwent the FFCB. No patients in neither group needed Phosphodiesterase-5 inhibitors (PD5-I) drugs before or after the intervention. The percentage of patients taking preoperatively beta-blocker drugs was sim-

Table I - *Demographic and clinical features of the patients of both groups.*

	Endovascular Group (n=14)	Open repair group (n=19)	P value
Rutherford's Class			
3	5 (35.7%)	7 (36.8%)	0.94
4	9 (64.3%)	12 (63.2%)	
Diabetes	2 (14.3%)	4 (21.1%)	0.63
Hypertension	7 (50%)	15 (78.9%)	0.08
Smoke Habits (current and previous)	14 (100%)	16 (84.2%)	0.71
Dyslipidemia	9 (64.3%)	10 (52.6%)	0.51
Chronic Renal Failure	2 (14.3%)	3 (15.8%)	0.9
Coronary Artery Disease	5 (35.7%)	10 (52.6%)	0.35
Chronic Obstructive Pulmonary Disease	3 (21.4%)	2 (10.5%)	0.4
Left side	6 (42.8%)	11 (57.9%)	0.4
Age, years (mean+2st.dev)	63.4+14.4	71.8+17	0.003
BMI (mean+2st.dev)	24.5+5.6	26.4+5.2	0.05
Beta-blocker drugs	3 (21.4%)	4 (21.1%)	0.99
Preoperative Erectile Dysfunction	10 (71.4%)	14 (73.7%)	0.9
Postoperative Erectile Dysfunction	8 (57.1%)	15 (78.9%)	0.18
Preoperative IIEF questionnaire (mean±2st.dev)	17.1±12.8	14.9±7.02	0.35
Postoperative IIEF questionnaire (mean±2st.dev)	18±10.1	12.1±14.8	0.01
LOS, days (mean±2st.dev)	2.7±3.6	3.4±2.1	0.1

*LOS=length of stay; IIEF= International Index of Erectile Function

TABLE II - *Preoperative and postoperative occurrence of Erectile Dysfunction in both the endovascular and the open repair groups (part A). Preoperative and postoperative results of the validated International Index of Erectile Function questionnaire.*

A.	Preoperative ED (n, %)	Postoperative ED (n, %)	P value
Endovascular Group	10 (71.4%)	8 (57.1%)	0.44
Open Repair Group	14 (73.7%)	15 (78.9%)	0.72
B.	**Preoperative IIEF questionnaire (mean±2st.dev)**	**Postoperative IIEF questionnaire (mean±2st.dev)**	**P value**
Endovascular Group	17.1±12.8	18±10.1	0.7
Open Repair Group	12.1±14.8	12.1±14.8	0.24

*IIEF= International Index of Erectile Function; ED= Erectile Dysfunction

ilar in both groups (21.4% in the endovascular group versus 21.1% in the FFCB group, P=0.99).
Technical success was 100% for both groups and there were no in-hospital complications. No deaths were recorded neither in-hospital, nor at 30 days.
Patients' mean length of stay was similar for both groups (2.1±1.6 days in group A versus 2.7±2.1days in group B, P=0.1). No patient died during follow-up (median 26.2 months, IQR 10-35.4 months) neither had graft infection, and primary patency was 100% in both groups.
Before the operation, no differences were recorded in the occurrence of ED between the two groups, neither in the results of the validated IIEF questionnaire (Table I). However, 30 days after the intervention, patients who were submitted to endovascular antegrade revascularization performed significantly better than those who underwent FFCB in terms of IIEF questionnaire (18±10.1 versus 12.1±14.8, P=0.01).
In the endovascular group, no differences were recorded before and after the operation in terms of occurrence of ED and results of the validated IIEF. The same was observed before and after the operation in the surgical group (Table II A and B).
At logistic regression analysis, age was the most important factor affecting the occurrence of preoperative ED (OR 1.31, 95%CI 1.04-1.65, P=0.02), the preoperative results of the IIEF questionnaire (OR 0.04, 95%CI 0.02 - 0.05, P<0.001) and the postoperative results of the IIEF questionnaire (OR 0.02, 95%CI 0.01 - 0.04, P<0.001), irrespectively of the groups (Table III).
The values of the preoperative IIEF questionnaire were also significantly affected by COPD (OR 0.29, 95%CI 0.01-0.56, P=0.03). The postoperative values of the IIEF were then affected by the presence of COPD (OR 0.46, 95%CI 0.17-0.75, P=0.001), by the BMI (OR 0.07, 95%CI 0.03-0.10, P<0.0001) and by the type of revascularization corrected by age (for open surgery OR 6.12, 95%CI 1.19-11.05, P=0.02).

Discussion

ED is a common clinical entity that affects 10% of men between 40 and 60 years old [5]. Prevalence of ED is strongly age-related ranging from 20% to 40% in men older than 60 years [2,6].
Comparably, in our clinical series age was significantly related to the preoperative presence of ED and presented an inverse correlation with the values of both preoperative and postoperative IIEF questionnaire, meaning that younger patients were those who had higher results and therefore less sexual impairment.
Among the multiplicity of factors which may lead to ED, vascular causes and particularly chronic iliac occlusions account for an important cause. Gur et al. in 2013 reported that sexual disfunction was present in about three quarter of the patients affected by CIA occlusive disease, and the endovascular recanalization of the occlusions improved sexual function in more than half of these patients [5].
The treatment of CO of the CIA can be performed either through open surgery or endovascular approach. In the case of short occlusions of the CIA (< 5 cm), the international guidelines recommend endovascular recanalization as a first strategy, which has a low risk of perioperative complications and good long-term patency rates (90% over 5 years) [7]. Open surgery with anatomic bypass (aorto-bifemoral bypass) should be considered in fit patients with complex aorto-iliac occlusions because of its superiority to FFCB. In this case, however, the abdominal surgery can even deteriorate the erectile function due to the risk of iatrogenic damage on the autonomic fibers [12]. Otherwise, when isolated long iliac occlusions cannot be revascularized through an endovascular approach, an extra-anatomic bypass such as FFCB could be the option of choice. In this case, there is no harm on the pelvic autonomic fibers caused by the surgical dissection.
Both surgical and endovascular treatments restore an antegrade flow to the affected limb. On the other side, the flow to the HA is restored through a retrograde fashion in case of surgical approach, while an antegrade direct flow is restored to the HA when the endovascular recanalization is successful.
As a result, symptoms of buttock claudication disappear or ameliorate in most of the treated patients, given of course the patency of the endovascular or surgical graft. However, few data are known about the prognosis of

TABLE III - *Logistic regression of factors affecting the occurrence of preoperative and postoperative Erectile Dysfunction (ED), and the values of preoperative and postoperative International Index of Erectile Function (IIEF) questionnaire. Odds Ratios (OR) with 95% Confidence Intervals (CI) and coefficient of correlation (R) are reported.*

	OR	95% CI	R	P value
Preoperative ED				
Age	1.31	1.04-1.65	2.34	0.02
Body Mass Index	1.48	0.83-2.62	1.34	0.18
Diabetes Mellitus	2.56	0.06-99.47	0.50	0.61
Hypertension	1.07	0.01-3.68	1.31	0.19
Smoking habits	1.52	0.19-12.05	0.40	0.68
Dyslipidemia	2.32	0.08-64.55	0.50	0.62
Chronic Renal Failure	3.53	0.03-395.15	0.53	0.60
Coronary Artery Disease	1.18	0.01-6.27	0.95	0.34
Chronic Obstructive Pulmonary Disease	1.36	0.01-9.94	0.59	0.55
Beta-blocker drugs	1.22	0.05-2.22	0.16	0.23
Retrograde revascularization	1.19	0.006-5.40	0.97	0.33
Postoperative ED				
Age	1.05	0.90-1.23	0.68	0.49
Body Mass Index	0.89	0.60-1.32	-0.56	0.57
Diabetes Mellitus	0.06	0.003-1.33	-1.77	0.07
Hypertension	2.20	0.15-32.19	0.58	0.56
Smoking habits	1.99	0.27-14.29	0.69	0.49
Dyslipidemia	0.04	0.002-0.95	-1.99	0.05
Chronic Renal Failure	0.06	0.000-3.68	-1.34	0.18
Coronary Artery Disease	6.66	0.31-140.77	1.22	0.22
Chronic Obstructive Pulmonary Disease	0.12	0.005-2.57	-1.35	0.17
Beta-blocker drugs	1.35	0.05-1.12	0.26	0.44
Retrograde revascularization	2.11	0.18-24.43	0.60	0.55
*Preoperative IIEF**				
Age	0.04	0.02 - 0.05	-5.77	<0.0001
Body Mass Index	0.02	0.01 – 1.06	-1.36	0.17
Diabetes Mellitus	0.01	0.24 – 1.27	-0.11	0.95
Hypertension	1.11	0.08 – 1.34	1.97	0.33
Smoking habits	1.02	0.03 – 1.19	1.35	0.72
Dyslipidemia	1.15	0.07 – 1.37	1.35	0.17
Chronic Renal Failure	1.21	0.15 – 1.34	0.45	0.63
Coronary Artery Disease	1.11	0.10 - 1.25	1.03	0.30
Chronic Obstructive Pulmonary Disease	0.29	0.01 - 0.56	-2.09	0.03
Beta-blocker drugs	1.15	0.02-1.65	1.20	0.39
Retrograde revascularization	1.21	0.03 – 1.45	1.70	0.09
*Postoperative IIEF**				
Age	0.02	0.01 - 0.04	-3.93	<0.0001
Body Mass Index	0.07	0.03-0.10	-3.49	<0.0001
Diabetes Mellitus	1.19	0.06 – 1.46	1.46	0.14
Hypertension	1.03	0.37 – 1.11	1.06	0.28
Smoking habits	1.06	0.24 – 1.31	0.73	0.46
Dyslipidemia	1.16	0.06 – 1.39	1.38	0.16
Chronic Renal Failure	1.38	0.22 – 1.75	0.69	0.23
Coronary Artery Disease	1.16	0.38 – 1.24	1.52	0.12
Chronic Obstructive Pulmonary Disease	0.46	0.17-0.75	-3.19	0.001
Beta-blocker drugs	0.59	0.04-1.98	0.55	0.27
Retrograde revascularization	6.12	1.19 - 11.05	2.53	0.01

*OR for each point change in IIEF score

ED, particularly with regards to a possible different outcome when either an antegrade or a retrograde flow is restored on the ipsilateral HA.

Jaquinandi et coll. in 2008 studied regional pelvic blood flow impairment using transcutaneous oxygen pressure on buttocks, in 48 patients who were submitted to aorto-bifemoral bypass grafting. They found that regional pelvic flow was impaired in 81.2% of the patients before surgery, and the aorto-bifemoral bypass provided a little improvement of proximal perfusion, probably given the absence of direct HA revascularization [13].

Similarly, Paumier et coll. in 2010 evaluated the bene-

fits of direct versus indirect revascularization of HA in 93 patients affected by peripheral artery occlusive disease with proximal lower limb ischemia. They found that buttock blood flow impairment was more likely to persist after treatment in patients with indirect revascularization of the HA if compared to those who received an antegrade restoration of the blood flow to the HA. Moreover, according to their results, the preoperative severity of the aorto-iliac lesion did not affect the blood flow impairment of the HA [14].

In our experience, no differences were recorded in the preoperative occurrence of ED between the two groups, neither in the results of the validated IIEF questionnaire before the treatment. However, after the intervention, a significant better outcome in terms of IIEF questionnaire was recorded in patients who were submitted to endovascular revascularization with antegrade restoration of the blood flow to the HA.

Therefore, from a practical point of view, in case of disabling claudication or critical limb ischemia due to CO of CIA, endovascular approach should be the option of choice also because it could have a benefic effect on ED, more than open surgical revascularization.

According to logistic regression analysis, the presence of COPD negatively affected the values of both preoperative and postoperative IIEF questionnaire, irrespectively of the groups. This finding agrees with what has already been described in the literature about the presence of sexual impairment in up to 70% of patients affected by COPD [15].

Our study has some limitation, such as the retrospective nature of the analysis and the small sample size, which could impair the statistical power of the analysis, preventing from generalization of the observed results.

Further studies with larger sample size are therefore needed to provide a better insight for the diagnosis and optimal treatment of these patients.

Conclusion

Patients who were submitted to endovascular antegrade revascularization of the CO of the CIA performed significantly better in terms of IIEF questionnaire than those who underwent surgical femoro-femoral crossover bypass and therefore retrograde HA revascularization.

Older patients were more likely to have sexual impairment both before and after the treatment and irrespectively of the groups. Similarly, the presence of COPD negatively impacted on the values of both preoperative and postoperative IIEF questionnaire, irrespectively of the groups.

Riassunto

Scopo del lavoro è stato di valutare l'effetto della rivascolarizzazione dell'arteria iliaca comune (AIC) anterograda e retrograda sulla disfunzione erettile (DE) utilizzando il questionario convalidato dell'Indice Internazionale della Funzione Erettile (IIEF), su pazienti che sono stati trattati per occlusioni croniche della AIC.

Sono stati retrospettivamente raccolti e analizzati i dati clinici di pazienti sottoposti a rivascolarizzazione endovascolare della AIC (gruppo A) o a bypass crossover femorale-femorale (gruppo B) tra gennaio 2015 e dicembre 2019 per claudicatio intermittente invalidante o ischemia critica degli arti inferiori, sostenuta da un'occlusione totale unilaterale della AIC, con conservata pervietà di entrambe le arterie ipogastriche. Endpoint primario è stata la valutazione della DE utilizzando il questionario IIEF-5, prima dell'intervento e 30 giorni dopo. I test chi-quadro e T e l'analisi di regressione logistica sono stati utilizzati per l'analisi statistica. Un valore P <0.05 è stato considerato statisticamente significativo.

Sono stati analizzati i dati di 33 pazienti stati sottoposti a trattamento endovascolare (14 pazienti, gruppo A) o chirurgico (19, gruppo B). Prima dell'operazione, non sono state registrate differenze nella comparsa di DE tra i due gruppi, né nei risultati del questionario IIEF. Dopo l'intervento, i pazienti del gruppo A hanno ottenuto risultati significativamente migliori rispetto a quelli del gruppo B in termini di questionario IIEF (18±10.1 contro 12.1±14.8, P=0.01).

L'età e la BPCO erano correlate negativamente con i risultati preoperatori del questionario IIEF (OR 0.049, 95% CI 0.02-0.05, P<0.001 e OR 0.29, 95% CI 0.01-0.56, P=0.03, rispettivamente) e con i risultati postoperatori del questionario IIEF (OR 0.02, 95% CI 0.01-0.04, P<0.001 e OR 0.46, 95% CI 0.17-0.75, P=0.001, rispettivamente).

I pazienti che sono stati sottoposti a rivascolarizzazione endovascolare anterograda per occlusione dell'AIC hanno ottenuto risultati significativamente migliori in termini di questionario IIEF rispetto a quelli sottoposti a bypass crossover femorale-femorale chirurgico e quindi a rivascolarizzazione retrograda dell'arteria ipogastrica. L'età e la BPCO hanno avuto un impatto negativo sui valori del questionario IIEF sia preoperatorio che postoperatorio, indipendentemente dai gruppi.

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Commento e Commentary

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La patologia arteriosa ostruttiva ha un gran numero di varianti, non solo in considerazione dell'età e delle possibili localizzazioni multidistrettuali, ma anche in relazione all'efficienza cardiaca del singolo paziente, con differenti e significative situazioni emodinamiche. Lo studio presentato ha un approccio prevalentemente descrittivo su una serie di casi piuttosto limitata numericamente, mirando con due diverse soluzioni tecniche alla rivascolarizzazione dell'arteria ipogastrica.
I risultati dello studio hanno un valore indicativo riconoscibile, anche se le casistiche non sono del tutto confrontabili per disomogenei livelli di arteriopatia ostruttiva, simili solo per l'ostruzione unilaterale di un'arteria ipogastrica, ma differenti anche per la lunghezza del tratto ostruito.
La soluzione dell'intervento terapeutico in un caso ripristina il flusso anterogrado aorto-iliaco del lato affetto, a vantaggio della vascolarizzazione dell'intero arto nonché dell'arteria iliaca interna (a. Ipogastrica), mentre nell'altro caso il flusso arterioso recuperato dal lato presuntivamente non affetto viene distribuito all'intero asse iliaco-femorale del lato interessato, probabilmente con solo un parziale beneficio dell'arteria ipogastrica, perché si tratta di un flusso recuperato in via retrograda, ma con inevitabile parziale riduzione del flusso dell'arteria ipogastrica controlaterale non interessata.
Una serie di casi più numerosa e una precisa descrizione angiografica preoperatoria della circolazione arteriosa distale alla biforcazione aortica, a parte la lunghezza del tratto iliaco ristretto o occluso, possono consentire una scelta più precisa in uno studio prospettico sull'opportunità di adottare l'unico tipo d'intervento o l'altro, scegliendo per il singolo paziente la soluzione ottimale.
Lo studio retrospettivo presentato, nonostante i suoi limiti numerici, offre comunque un orientamento preliminare per futuri approfondimenti.

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Obstructive arterial pathology has a large number of variants, not only in consideration of age and possible multi-district locations, but also in relation to cardiac efficiency of the single patient, which different and meaningful hemodynamic patterns.
The study presented has a predominantly descriptive approach on a too numerically limited case series, aiming with two different technical solutions at the revascularization of the hypogastric artery.
The results of the study have a recognizable indicative value, even if the case series are not completely comparable because of inhomogeneous level of disease, similar only for the unilateral obstruction of one hypogastric artery, but different also as for the length of the obstructed tract.
The solution of the therapeutic intervention in the one case restores the aorto-iliac antegrade flow of the affected side, which benefits for the vascularization of the entire limb as well as the internal iliac artery (hypogastric a.), while in the other case the arterial flow recovered from the presumptively uninjured side is distributed to the entire affected iliac-femoral axis, probably with only a partial hypogastric artery benefit, because of a recovered retrograde flow, but with inevitable partial reduced flow of the contralateral unaffected hypogastric artery.
A more numerous case series and a precise preoperative angiographic description of the arterial circulation distal to the aortic bifurcation, apart from the length of the restricted or occluded iliac tract, may allow a more precise choice in a perspective study on whether to adopt the one type intervention or the other, tailoring on the single patient the optimal solution.
The retrospective study presented, despite its numerical limitations, nevertheless offers a preliminary orientation for future in-depth studies.