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RESEARCH ARTICLE

Exercise therapy results of postoperativ treated critical iliac artery stenosis (TASC II A and B) patients who were infected with the Covid 19

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ABSTRACT

Introduction: Adequate individual physical activity after COVID 19 infection as a inevitable part of postoperative therapy of surgically treated vascular and endovascular patients witch still remains a scientific unexplored international neglected secret. General post-covid symptomatology is increasingly present in patients with surgical or endovascular procedures on the iliac segment in the form of a manifestation of various complaints that can affect the very accessibility of the choice of treatment according to the TASC II guidelines, but also affect physical activity and quality of life. Besides the medicament treatment, the management of moderate intensity exercise therapy and future consistency of self-controlled exercise after surgical and endovascular after treatment in iliac critic stenosis with other asymptomatic systemic atherosclerosis can be important factor to support and improve benefits of surgical and endovascular treatment outcome in variable symptomatology of POSTCOVID 19 patients treated classical surgical and endovascular.

Goals: The focus is on priority of investigation of remodeling the pattern of cultural smoking behavior and increasing the dynamic of physical activity trying to prevent and avoid potential risk of sudden death, myocardial infarction, stroke graft (stent) occlusion, and cardiovascular mortality in patients with POSTCOVID 19 symptomatology in which is besides other asymptomatic systemic atherosclerosis is the main disease critical iliac artery stenosis (TASC II A and B). Scientifically unproven that sometimes can be associated with poor outcome of surgical intervention the which are in deficit with scientific studies to confirm these scientific observations. Second goals are to investigate the potential possibility of POST COVID 19 symptomatology associated with the success of classic surgical bypass or endovascular intervention and the possibility of reflection on physical activity after vascular intervention. Also the improving and secure the quality of life after successful surgical bypass and endovascular revascularization treatment with influence on primary iliac (TASC II A and B) vascular intervention potency one of main goals as well suppress permanent or permanent consequences of the Covid 19 virus during therapeutic surgical or endovascular procedures of the iliac segment (TASC II A and B) Traditional food as well wrong choice of diet and continuous fight with nicotinism is still remains generally main health threat.

Subjects and Methods: 266 Symptomatic post COVID 19 Patients with were observed during 3 years (134 patients with surgical dacron reconstruction and 132 with endovascular treatmant of short segment critical iliac artery stenosis) Moderate interval Intensity Training with Short Interval Repetitions on standard treadmill procedure.

Results: The connection of the outcome of surgical and endovascular treatment with post and long covid 19 symptomatology is possible and has a significant impact on the quality of the continuation of physical medication therapy. Difference between the surgical and endovascular groups was observed after the implementation of the treatment as well as factors affecting the outcome of therapy. the outcome is devastating with the prevention of the risk factor of nicotism as well as with the lack of physical activity in some groups.

Conclusion: Primary potency after Three years of Endovascular procedure and Dacron bypass Revascularization, has shown as successful with support of supervised exercise training in POSTCOVID 19 patients. Nicotiism still remains highly potency outcome threat when supporting exercise therapy. Also, future and recent studies on this topic should expand their understanding of the effect of the COVID 19 virus on the body in this patients, as well as improving the quality of life in order to improve the patency of bypass or endovascular intervention on the arterial iliac segment.

Keywords: Surgical Treatment, Endovascular treatment. Symptomatic Post-Covid 19 and long COVID 19 Patients, Moderate Intensity Exercise Therapy, Critical Iliac Artery (TASC II A and B)

Introduction

The influence of the reflection and consequences of COVID-19 itself on physical activity after bypass surgically vascular and endovascular stent treated patients with critical iliac artery stenosis (TASC II A and B) patients who also have systemic asymptomatic atherosclerosis, without indication for invasive classical vascular or noninvasive endovascular treatment, still remains international unexplored neglected scientific topic[1]. Cultural and passionate consumption of cigarettes impregnated dangerous, widespread and independent risk factor as a socio-economic trend in developing countries in the Balkan region, and partly among the European population. Responsible for cardiovascular disease, hypertension and progression of critical stenosis of atherothrombosis of the main iliac segment in the compensatory state, to meet the oxygen needs of distal segments leading to different and specific claudication symptomatology of individual disability where in addition to drug treatment, surgical or endovascular treatment is unavoidable[1-3].

In addition to vascular classical reconstructive surgery and endovascular treatment, intensity and dynamic continuity of physical activity is important. An inevitable component of the synergy benefits of medical and surgical treatment in cardiovascular patients with critical iliac arterial stenosis (TASC II AI B) that promotes better efficacy of the drug. In order for physical activity to achieve the best possible cardiovascular benefit, the crucial factor is the adequate concept of implementing dietary remodeling with stress reduction, which aims to improve the effects of targeted drug therapy. Claudication symptomatology in cardiovascular patients at the level of the patella and gluteal region in the form of critical stenosis of the iliac segment over 75% of hemodynamic obstruction of the arterial lumen that disables the patient to perform daily activities is most often treated with iliac angioplasty or stent application[4-7].

As a standard method of treatment in the guidelines of the iliac segment, the guidelines of "The Trans-Atlantic Inter-Society Consensus II" (TASC II A and B) with rare cases, potential exceptions to the application of the classical surgical bypass method. Although established endovascular treatment of the iliac segment is safe and a traumatic for patients, some questions remain about the modalities of the intensity of vascular rehabilitation to primary patency. Given that these are two comparative therapeutic modalities of the iliac segment of primary endovascular therapy, and very similar efficacy, the question arises which is more favorable for the patient and with longer-term therapeutic benefit of patency in critical stenosis with modifications of physical activity[8-9].

The role of vascular rehabilitation with optimization of the primary potency of endovascular and surgical treatment in critical stenosis over 75% of the iliac segment with other asymptomatic systemic atherosclerosis still leaves open questions. The advantages of endovascular treatment of the iliac segment with the method (PTA and Self expendable stent) do not deviate from the classic surgical procedure, but significantly shorten the operative and postoperative course as well as rehabilitation, because the patient is capable of free activities immediately after treatment. Despite all clinical and scientific studies, the

advantages of endovascular treatment of the iliac segment (TASC II A and B) over surgical and continued benefits of patency. The indicative load of physical activity remains in the field of individualization of treated patients and depending on the compensatory collateral system. The functional significance of narrowing of the iliac arterial segment is the most important problem in cardiovascular pathology[10,11].

It has long been known that a narrowing leads to a drop in pressure and flow distal to its location, so the intersection zone behind which the phenomenon of pressure drop. Despite all the recorded benefits, the focus is on the postoperative treatment with medication (conservative) without which patients cannot control their vital and laboratory parameters within the limits of physical normality or the emphasis is on improving postoperative vascular rehabilitation in synergy with drug therapy. Better therapeutic benefit of physical activity and recognizable effect of primary patency after endovascular treatment on the iliac segment of the guidelines (TASC II A and B) in the form of suppression of claudication symptoms after endovascular intervention or classic surgical bypass treatment[11-14].

Although any physical activity of aerobic nature leaves a strong cardiovascular benefit to strengthen the heart muscle and improve general circulation as well as improve ejection fraction (EF), and a positive effect on cholesterol levels and reduce systolic and diastolic pressure, and proven to reduce mortality by 25-35%. There are still some open questions of scientific debate about the ideal individual intensity of physical activity of high-intensity interval training (HIIT) over 90%[6-12], MET (metabolic equivalents) as well as the benefits of moderate-intensity continuous training (MICT) 50-70% of approximately 4-6 MET in patients with arrhythmias and other comorbidities. As well as to strengthen the left ventricle with failure of myocardial heart function, and a better and more advanced quality of life with a reflection on the patency of coronary artery bypass grafting and catheterization and not to disturb the quality of patency of endovascular intervention of the iliac segment by further locomotor rehabilitation function of hip muscles during physical activity (cycling, running)[15-23].

The question of the success of the quality of further treatment benefits from self-initiated and control training of medium-intensity monitoring with short intervals in cardiovascular patients who underwent coronary bypass or cardiac catheterization with emphasis on the primary patency of surgical bypass and endovascular treatment in patients with critical stenosis of the iliac segment (TASC II A and B) combine with other asymptomatic systemic atherosclerosis. Whether these measures can support synergistic post-interventional drug quality mechanisms of primary patency of vascular iliac intervention or are self-initiated rehabilitation measures for physical activity low activity -4 (MET) are insufficiently medically ineffective and cardio protective in patients without concomitant comorbidities as well as inadequate support in further treatment and control of culturally impregnated risk factor of passionate consumption of cigarettes which plays a significant role in d further primary patency of vascular surgical and endovascular treatment of the iliac segment. A scientific puzzle arises as to whether patients after surgical or

endovascular treatment on the iliac segment (TASC II A and B guidelines) can, in addition to the indicated anticoagulant therapy, self-initiated physical activity influence the outcome of the quality of the vascular procedure without the appearance of lethargy, a dynamism and other complications related to post COVID 19 infection[24-37].

Aim of study

The goals of this study are to reduce, eliminate and estimate patterns of nicotine intake as a risk factor for primary occlusions of surgical and endovascular intervention of the iliac segment (TASC II A and B) in patient who were infected by COVID 19 virus as well as POSTCOVID 19 and long COVID 19 symptomatology, cardiovascular risk factors with modified moderate-activity physical activity (MET) <6 short interval increments over > 6 (MET), total duration 30-60 minutes and try to remodel the pattern of behavior of nicotinic statics with the dynamics of physical activity in a patient dependent on nicotinic status. The average daily cigarette intake of all 62 patients was 33.32 cigarettes per day while the average cigarette consumption was 26.12 years. As a competence and support of the psychological factor of motivation, we have included experts from the sports fields of sports recreation.

Material and methods

PARTICIPANTS AND EXPERIMENTAL DESIGN

The study was conducted patients who underwent surgery and endovascular interventions in hospitals in the demographic area of the Balkans (parts of former Yugoslavia). Also the study was conducted on Special Hospital dr. Solakovic, Clinical Center of the University of Sarajevo Clinic for Cardiovascular Surgery (KCUS), Faculty of Sport and Physical Education, in the period from May 2020 to May 2023 (observation period of 36 months/3 years).

266 Symptomatic post COVID 19 and long COVID 19 Patients were observed during 3 years (134 patients with surgical dacron reconstruction and 132 with endovascular treatment of short segment critical iliac artery stenosis and with other asymptomatic systemic atherosclerosis). Moderate interval intensity training with short interval repetitions on standard treadmill procedure. Due to the large number of patients who underwent surgical or endovascular interventions, there are also patients with a history of cardiovascular etiology. Fifteen (15) patients from both groups as support therapy had hyperbaric chamber treatments due to persistent fatigue and difficulty of breathing (ATA 2.2-3.0, 60-120 min/average per treatment) for 36 months of supervised study. Eight (8) patients aged 40 to 65 with critical iliac segment stenosis over 75% (TASC II A and B) were included in a study who underwent invasive (coronary bypass) or minimally invasive (stent) procedures on coronary arteries 12 or more months ago due to ischemic diseases.

All patients underwent an ergometry (cardio stress test) before joining the study and met the clinical requirements for participation in the study, 39 patients in both groups. All patients were also excluded from the study if they had the following conditions within 36 months: myocardial infarction, peripheral vascular surgery or percutaneous intervention, unstable angina, stroke or

transient ischemic attack (TIA), deep vein thrombosis (DVT), dilatation or aneurysm of the arcus or ascending aorta, acute or chronic liver disease within, coagulopathy, or various types of malignancies as well as diabetes mellitus insulin dependent patients. During and before study, patients in both groups have confirmed positive history of cured COVID 19 infection such as post COVID 19 symptoms. All 266 examined patients were infected with the confirmed Corona 19 virus for an average of three years (2.34 years). All patients were on a traditional type of food co-consumption for a period of three years and before.

Results

The results of the study are contained in the continuation of the text.

Postcovid 19 symptomatology in all 266 patients before 36 months of study p> (0,001)

- ✓ Difficulty thinking or concentrating ("brain fog") 45±3
- ✓ Sleep problems (transient and persistent symptoms) 14±3
- ✓ Headache. 53±3
- ✓ Dizziness when you stand up (lightheadedness) 21±3
- ✓ Pins-and-needles feelings. (transient symptoms) 12±3
- ✓ Change in smell or taste. (transient symptoms) 43±3
- ✓ Depression or anxiety. transient and persistent symptoms 12
- ✓ Anxiety (Patients who were intubeted or on mechanical ventilation) 125
- ✓ Tiredness or fatigue that interferes with daily life 130±1
- ✓ Joint or muscle pain (CALF,THIGT,BACK) 87±2
- ✓ Difficulty breathing or shortness of breath 65±8
- ✓ Chest pain (without presents of confirmed coronary diseasewhich requires surgical or cardiological interventional treatment) 34±5

Endovascular iliac (TASC II A I B) revascularization with supervised and self-controlled moderate intensity short interval repetitions exercise therapy p>(0,001)

- ✓ Aplication of (illiac Self expendable stent) in critical external iliac stenosis 130
- ✓ Aplication of PTA illiac Common artery (Percutaneous Transluminal Angioplasty) 2

The patency of the examined group of endovascular interventions of the iliac segment in 29 patients was monitored by ultrasound (by a vascular surgeon as well as a radiologist "double-blind study") with the use of stent (Iliac Self expendable stent) and Percutaneous Transluminal Angioplasty (PTA). Supervision of further physical activity treatment was carried out by the sports medical team of the University of Sports and Physical Education Sarajevo and the University of Sports and Physical Education East Sarajevo in successful coordination with world sports experts as well as cardiologists and vascular surgeons regarding the general condition of cardiovascular symptoms. Secondary monitoring is the risk factor of smoking as one of the main risk factors, and

the correlation between smoking and physical activity, as well as the outcome of the endovascular procedure of the iliac segment of the guidelines (TASC II A and B).

Surgical bypass iliac (TASC II A AND B) revascularization with supervised and self-controlled moderate intensity short interval repetitions exercise therapy (p>(0,001)

- ✓ Iliaco- femoralni bypass (dacron) 6-9mm 24
- ✓ Aorto-femoralni bypass (dacron) 6-9mm 95
- ✓ Aorto -iliacal bypass (dacronprothesis) 13
- ✓ Aorto -biiliacal bypass (bifurcation dacron prothesis) 2

The patency of the control group of endovascular intervention of the iliac segment in 33 patients was monitored by ultrasound (by a vascular surgeon, as well as a radiologist "double-blind study" with the mentioned bypass procedures used dacron prosthesis. Secondary monitoring is the risk factor of smoking as one of the main risk factors, and the correlation between smoking and physical activity, as well as the outcome of the surgical procedure of the iliac segment of the guidelines (TASC II A and B). It was emphasized to all patients that nicotine is a strong and very vascular destructive risk factor.

Table 1. Total patients (endovascular and surgical group) before vascular treatment (N=266) p> (0,001)

Average BMI male	25 ± 3,2
Average BMI female	26 ±4,2
Age 40-45	9
Age 45-50	7
Age 50-55	96
Age 55-60	131
Age 60-65	23
Average male age	51,2
Average female age	55,8
Arterial Hypertension and Prehypertension (controlled under medication)	220
Angina pectoralis stabilis (controlled under medication)	2
Current smoker	265
Average History of smoking in all patients (years)	34±4
Diabetes mellitus typ II non-insulin depent	6±2
Caludication Symptoms over 200m	10
Caludication Symptoms under 200m	14
Caludication Symptoms under 100m	234
Critical ishemia (claudication under 10 meters)	12
Terminal ishemia	0

Table 2. Characteristics of the respondents

Total patients	266
Lost to follow up (mortality, malignancies and other listed diseases)	14
Mean BMI male	26±0,2
Mean BMI female	24±0,2
Angina pectoralis stabilis	4
Diabetes mellitus typ II non-insulin and depent patients	7±1
Myocardial infarction (Stent ivtervention)	2
Ishemic stroke	4
Haemoragic strok	1
Current smoker	232

Results after 6 months, one year, two years and three years (total 36 months of study) p>(0,001) contains in table below. The analysis of the data indicates that among the examined patients treated endovascularly or classically surgically, post-covid 19 symptoms statistically significantly indicate the presence of permanent symptoms of anxiety (in 125 investigated patients or 46,92%) and fatigue (in 130±1 investigated patients or 48,87 %) for p>(0,001).

A statistical subject of attention show poorly treated transient anxiety and depression in 4.5% of cases in (12 patients) for (p> 0,001). Of the 266 examined patients, classic surgical Aorto-femoral bypass revascularization with (dacron graft) 6-9 mm (95 patients or 70.89 %) for (p> 0,001) and endovascular stent intervention with Iliac Self-expendable stent (130 or 97,74 % of the patients) for (p>0,001) were significantly the subject of research, while in patients PTA (3 patients or 2,25 %) and Aorto-biiliac bypass (4 patient or 17.91%) were satistically represented in the smallest number, for (p>0,001). 266 examined patients (or 99.62%) were long-term smokers with an average of 34±4 years of smoking.

Table 3. Results of primary vascular intervention potency (after 6, 12, 24, 36 months)

PRIMARY VASCULAR INTERVENTION POTENCY p>(0.001)	6 months	1 year
Iliaco- femoralni bypass (dacron) 6-9mm	24	24
Aorto-femoralni bypass (dacron) 6-9mm	95	95
Aorto -iliacal bypass (dacronprothesis)	13	13
Aorto -biiliacal bypass (bifurcation dacron prothesis)	2	2
Aplication of (Iliac Self expendable stent) in critical external iliac stenosis	130	130
Aplication of PTA illac Common artery	2	2
Moderate Intensity Exercise endovacular patients > 50 (MET) per week	60±6	20
Moderate Intensity Exercise surgical patients > 50 (MET) per week	23±1	23
Poor motivation Low Intensity Exerc. Endov. patient < 20 (MET) per week	24	24
Poor motivation Low Intensity Exercise surgical patient < 20 (MET) per week	34	34
Average exercise performance in surgical tretated patients peer week in /min	72,8± 0,21min/sec	62,8± 3,21 min/sec
Average exercise endovacular tretated patents peer week in /min	122,8± 0,21min/sec	112,8± 2,21 min/sec
Current smoker	234±2	256± 3,21
Former smokers	12±4	12±4
Average cigarette consumption in both groups after vascular intervention	24 ±2,91	22 ±2,10
Claudication Symptoms endovascular patients	0	0
Claudication Symptoms surgical patients	0	0
PRIMARY VASCULAR INTERVENTION POTENCY p>(0.001)	2 years	3 years
Iliaco- femoralni bypass (dacron) 6-9mm	24	24
Aorto-femoralni bypass (dacron) 6-9mm	95	95
Aorto -iliacal bypass (dacronprothesis)	13	13

Aorto -biiliacal bypass (bifurcation dacron prothesis)	2	2
Aplication of (Iliac Self expendable stent) in critical external iliac stenosis	130	130
Aplication of PTA illac Common artery	2	2
Moderate Intensity Exercise endovacular patients > 50 (MET) per week	20	20
Moderate Intensity Exercise surgical patients > 50 (MET) per week	23	23
Poor motivation Low Inten. Exercise endov. patient < 20 (MET) per week	24	24
Poor motivation Low Intensity Exercise surgical patient < 20 (MET) per week	34	34 ±2
Average exercise perfor. in surgical tretated patents peer week in /min	52,8± 0,21 min sec	62,8± 0,21 min sec
Average exercise endovacular tretated patents peer week in /min	122,8± 0,21 min sec	112,8± 0,21 min sec
Current smoker	57	227 ±2
Former smokers	6±1	23 ±2
Average cigarette consumption in both groups after vascular intervention	24 ±2,45	23 ±2,85
Claudication Symptoms endovascular patients	0	0
Claudication Symptoms over 200m (Fontain staige b) surgical patients	0	4

In the investigated period of 6 months, one to three years, the data on smoking cessation is at a culturally devastating level in an average of 21 subjects (7.89%; p>0,001) of both groups (classical bypass or endovascular), which is a surprising data on the way and quality of life, as well as the continuation of physical activity as a support for anticoagulant therapy. The significance and benefits of the edovascular treatment itself were confirmed in the very continuation of physical therapy after three years of the post-invasive stent treatment with a weekly average of 102.3 ± 6.81 min sec. (p>0,001), as the average of 60.3 ± 8.21 min sec of weekly exercise of physical therapy in the surgical group showed a reflection of the very aggressiveness of the classic surgical procedure itself in this population group (p<0,001).

Table 4. Results between intensity of exercise and vascular treated patients during three years of study

Current smoker endovacular tretated patents	265 p>(0,001)
Average Poor motvation Low Intensity Exercise endovascular patient < 20 (MET) per week	32
Claudication symptomalogy	2±1
Endovascular significant stenosis	0
Average Moderate Intensity Exercise endovascular patients > 50 (MET) per week	46
Claudication symptomalogy	0
Endovascular significant stenosis	0
Lethargy	57
Former smokers endovacular tretated patents	21
Average Poor motvation Low Intensity Exercise endovascular patient < 20 (MET) per week	23± 9
Claudication symptomalogy	12
Endovascular significant stenosis	0
Average Moderate Intensity Exercise endovascular patients > 50 (MET) per week	43 ±4
Claudication symptomalogy	1
Endovascular significant stenosis	0
Lethargy	43
Current smoker surgical tretated patents	5
Average oor motvation Low Intensity Exercise surgical patient < 20 (MET) per week	64 ±4
Claudication symptomalogy	2
Graft significant stenosis	3
Graft oclusssion	2
Average Moderate Intensity Exercise surgical patients > 50 (MET) per week	19 ±4
Claudication symptomalogy	0
Graft significant stenosis	3
Graft oclusssion	0
Lethargy	89±4
Former smokers surgical tretated patents	4
Average Poor motvation Low Intensity Exercise surgical patient < 20 (MET) per week	43
Claudication symptomalogy	6 ± 1
Graft significant stenosis	6
Graft oclusssion	0
Average Moderate Intensity Exercise surgical patients > 50 (MET) per week	21± 2
Claudication symptomalogy	5
Graft significant stenosis	2
Average of lethargy presense	61±3

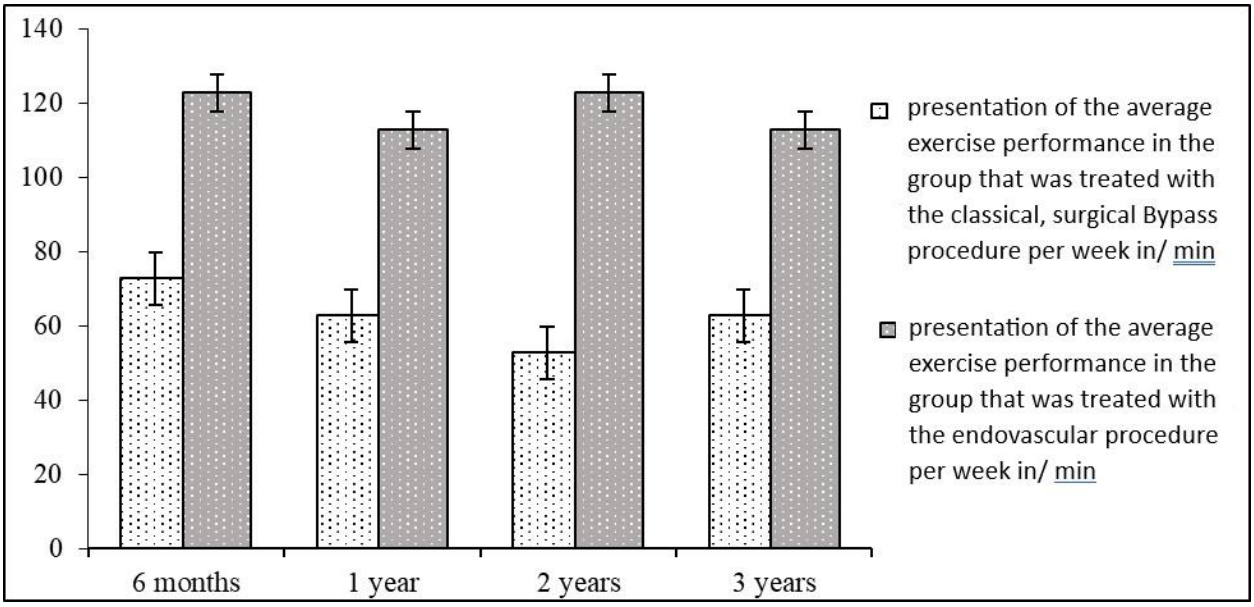

Figure 1. Comparison of exercise performances in the surgical and endovascular group (6 months, one year, two years and three years)

Also after 3 years of performing physical activity of medium and low intensity, the patency of vascular intervention (endovascular or classic surgical) gave statistically positive results on late complications such as Dacron graft occlusions in a three-year project in 2.12 patients with stenosis. Also occlusion of stents in an average of three years in 1.21 endovascular groups (p>0,001). which is impressive data for a socioeconomically developing country, as the average of both test groups smokes an average of 24±3,97 cigarettes a day after endovascular or surgical bypass intervention (p>0,001). A major problem is the presence of lethargy in both groups (endovascular and classic surgical) in 89 (66,41%) p>(0,001). patients who did not stop smoking cigarettes and continued their old lifestyle habits. Former smokers surgically treated patients also suffer from lethargy, which is the lowest in the endovascular population group with a lower number of current 57 patients (p>0,001) and former smokers 43 patiuents (p>0,001). Which gives an advantage to the endovascular population group in the further continuation of the treatment of the atherosclerotic disease itself, as well as the benefits of the treatment and the impact on the patency and quality of the vascular intervention it self.

Also, the benefits of high average physical activity were recorded in 43±4 (33.30%) of the endovascular population group with average moderate intensity > 50 (MET) per week in patients who stopped smoking, compared to the surgical population group of ex-smokers in 21±2 (15, 67 %) of average moderate exercise intensity over > 50 (MET) per week, which is far ahead of surgically treated patients. The lowest quality of postoperative vascular rehabilitation with an initial exercise intensity < 20 (MET) was recorded by the surgical group of heavy smokers with 64 ± 4 patients or in 48.12% of cases of surgically treated patients, which is statistically significant data of poor implementation of the quality of postoperative treatment as well as the potential possibility of

an increase in early stenoses and occlusion endangering the revascularized extremity itself.

Discussion

Passionate nicotineism as well as socio-economic condition as well as impaired mental status in the form of permanent anxiety and depression represent a complex condition that vascular surgery in socioeconomically developing countries is currently dealing with and directly and indirectly has an impact on the patency of bypass or endovascular intervention (stent/PTA). Decline in male hormones, including total production and release of free testosterone as well as dehydroepiandrosterone in middle-aged and older men. In andropause as low levels of total and free testosterone are associated with a higher incidence of the disease of atherosclerosis in all arterial systems. The question arises whether hormone replacement therapy used for men in andropause to alleviate the symptoms of "male menopause" can stop the progression of cardiovascular diseases and it still remains an open scientific question[38-42].

Lacking connection of deficits and the variation of testosterone levels in atherosclerotic patients is scientifically confirmeds. The connection between nicotism and patients who were infected with COVID 19 can limit the success of maintaining the quality of the procedure itself in the form of physical activity and directly affect the quality of the patency of surgical or endovascular iliac treatment (TASC II A and B). The clinical correlation of further surgical or endovascular treatment of the iliac segment is clearly indicated according to (TASC II A and B) guidelines, the claudication indication of obstruction of arterial segment hemodynamics obstruction with emphasis on technical performance of endothelial and patency of the performed intervention in accordance with potentially persistent progression or regression of individual symptoms[42-46]. In the therapeutic application of synthetic testosterone in patients with pronounced accompanying symptomatology with a deficit, it is possible that it would have an appropriate individual effect, while in sports abuse it causes a devastating irreparable error on the cardiovascular and mental system[47-55]. A rare number of patients treated surgically and endovascularly go through adequate guidelines for further individual remodeling of life, reduction of risk factors for nicotine and nutritional habits and activitis.

Primary patency of vascular treatment by a vascular surgeon in cardiovascular patients with coronary artery bypass grafting or catheterization. Adequately adjusted concept of physical activity of medium load towards short intervals of increase of load helps to preserve further functional and quality of life on all vascular systems in the form of prevention of primary graft patency as well as futuristic avoidance of revascularization and reoperation operations on different vascular segments and reflection on the patency of surgical bypass intervention and endovascular treatment, and showed improvement in quality of life and reduction of cardiovascular mortality without symptomatology of the clinical picture of intermittent claudication[23]. Although a small number of patients did not show motivation for physical activity, a large number of examined patients failed to stop nicotine consumption, adequate results would probably be better and with a better

effect on quality of life, cardio protection of transient cardiopulmonary revascularization and catheterization and vascular surgical bypass and endovascular (PTA / stent) treatment of the iliac segment. With corrected diet, smoking is still a strong and invaluable factor that physical activity is unable to correct in patients with surgical and endovascular cardiovascular patients treated repeatedly due to other ischemic claudication indications and other necessary strategic measures to continue treatment observation[25-30].

Nduaguba et al.[56] that active or former smokers who have an almost daily physical activity program show better suppression of problems and subjective and objective improvement of quality of life than the implementation of physical activity through Unlike physically inactive smokers, the study emphasizes the benefits of therapeutic targeted synergistic drug incorporation. Kirsten et al.[57] proves an inversely proportional relationship between lack of time of physical activity and habits of nicotine addiction patterns. Lack of time and physical activity seems to be intertwined and mostly socially compensated. Some prospective studies[22,58-60], show an association between different national socioeconomic differences, modalities of intensity, development and progression of further heart disease and reduction as well as benefits of protection from cardiovascular mortality. In addition to cardio benefit, physical activity affects the regulation of the ratio of HDL and LD1 as well as the prevention of type 2 diabetes mellitus in the form of an invasive effect on metabolic syndrome, while deficiency, irregular physical activity or even physical activity of low intensity is directly related to cardiovascular mortality and decreased HDL <1.03mmoL and the development of metabolic syndrome and the progression and development of type 2 diabetes mellitus and even the reduction of serum testosterone as a type of cardio protection around which scientific debates are still being conducted[39-47]. Walking as a common form of movement can be extraordinary individually adapted modified form of physical activity in the rehabilitation sense due to accompanying comorbidities after surgical and endovascular procedures and still safer indication area is physical activity of medium intensity in chronic cardiac and main central and peripheral atherosclerotic diseases. Tanasescu et al.[23] proves that if physical activity exceeds more than 50> MET (metabolic equivalents) weekly risk factor for cardiovascular clearance reduces the risk of 26% cardiovascular incident and a relatively significant factor in cardiovascular protection, which also affects primary patency or interstitial vascular patency (TASC II A and B) guideline evidence in our study. Patients smoking below <20 (metabolic equivalents) per week showed symptoms of claudication disease began to exhibit subjective discomfort after two years of surgical and endovascular vascular procedures which otherwise threatened potential endovascular re intervention. Implementation of medical efficacy of adequate intensity of physical activity is of important physiological importance for stimulation of myocardial oxygen demand with reflection on skeletal muscles with vasodilating muscle support of distal muscle parts on which re intervention is performed (surgical or endovascular concentration increases). Nitric oxide (NO) concentration)

which is responsible for vasodilation with additional increase in cardiac output (cardiac output) and strengthening the contractility of the left ventricular myocardium (left ventricular end-diastolic volume), regulation of heart rate (HF) and regulation of physiological hemodynamic adaptation of the artery. Rehabilitation of cardiovascular patients with surgical or endovascular iliac procedure is in addition to adequate vascular intervention should be expected from long-term smokers paradoxical reaction to inadequate physical activity and in addition to continuously motivated approaches of doctors and sports professionals and even with an increase in nicotine consumption, which contributes to further potential deterioration of general health, jeopardizing and weakening the effect of surgical or endovascular iliac surgery and the potential prognosis of graft stenosis or occlusion with included symptoms of claudication disorders. Studies by Despres at al.[61] show appropriate rehabilitation measures of low-intensity physical activity to light intensity physical activity 1-4 (MET) (metabolic equivalents) per day or <10.5 MET per week at 45-60 min almost daily with a significant response to insulin sensitivity with individual improvement of mechanisms and loss of adipose waist circumference with improvement of general metabolism, although we believe that intensity is sub dosed, and that load intensity is not sufficient to maintain dacron graft patency hemodynamics or iliac endovascular intervention, and this will not benefit synergy with drug therapy, as well as the potential for cardioprotection[52]. Although the application of a measure of low-activity physical activity is justified in an inactive group of patients with high age as well as with a high rate of combination and long-term nicotinism, significant in the effect of continuity was to have positive changes in the subjectivity and objectivity of the general condition and improvements in cardiorespiratory function[57-59]. Although some studies suggest cessation of nicotine regardless of the duration of nicotine consumption as well as age itself. Studies by[61-63] suggest that the cause of nicotine cessation does not depend on age and longevity of consumption as well as abstinence. According research[64] even indicate that smokers over the age of 62 (52.0%) under the age of 62 (38.1%) have a higher chance of abstaining from nicotine abstinence. from nicotine abstinence. However, older smokers are generally at greater risk of morbidity and mortality than younger patients who are more prone to comorbidities, although there is great confusion as to the results of smoking cessation at certain ages. However, new psychological and motivational concepts of combating the risk factors of smoking and physical inactivity will need to be worked on[61,65]

New multi strategic concepts will have to be generalized and attempted to be adopted, and implemented and incorporated, as nicotine and physical inactivation remain major cardiovascular problems, as well as problems after vascular surgery and endovascular interventions on the iliac segment (TASC II A and B) guidelines. Although in our country the issue of vascular surgery on all arterial segments and future continuation of therapy has been scientifically researched, there are still some scientific dilemmas regarding the very effect of the COVID 19 virus on our demographic

population. However, the impact of the COVID 19 virus on the progression of atherosclerosis in other arterial segments with different clinical symptomatology in countries with socioeconomic development still remains an unresolved subject of scientific debate.

Conclusion

Lack of data, such patients who overcame the COVID 19 infection in the territory of socio-economic countries in the developing Balkan region and as well as especially for countries in socioeconomic development such as Bosnia and Herzegovina as well as demographic countries in the Balkan region who were participants in the study provided interesting data. Regarding our experience, nicotine and low intensity of physical activity remain a key risk factor that, along with weak individual motivational efforts, occupies the cultural and socio-economic trend in countries in economic development such as Bosnia and Herzegovina. Consideration and pattern of nicotine has a huge role in the development of cardiovascular disease, and impairs the impact on the patency of the iliac segment, regardless of the support of drug therapy after surgery and endovascular intervention of the iliac segment (TASC II A and B). Possible potential rejections of cultural and passionate consumption of cigarettes deviation were noted in the middle-aged population, while the elderly group of patients in addition to motivational attempts could not overcome the established pattern of smoking habits and incorporate physical activity as part of conservative synergy after or endovascular treatment of iliac segment. METs per week (metabolic equivalents) have poorer patency of vascular intervention and a tendency to claudication symptomatology, and the very potential threat of stenosis, sub occlusion, and graft occlusion. also the application of hyperbaric oxygen therapy could have a serious potential application in these subjects in terms of treatment benefits.

Conflict of Interest:

The authors declare no conflict of interest.

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Ethical authorization

Since this is a postoperative follow-up of patients without modifications to the ethical indicative medical treatment, no ethical principle of this study has been violated.

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