بسم الله الرحمن الرحيم

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بقسم التوثيق الإلكتروني بمركز الشبكات وتكنولوجيا المعلومات دون أدنى مسئولية عن محتوى هذه الرسالة.

ملاحظات: لا يوجد

Early postoperative outcome of Posterior Component Separation through Transversus Abdominus Release for the treatment of Large Midline Incisional Hernia

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By

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بسم الله الرحمن الرحيم
قَالوُاسُبحَانَك لاَعلمَ لنَا إلا مَاعَلمتَناَ
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✍ *Ahmed Salah Kamel EL-Samahy*

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Early postoperative outcome of Posterior Component Separation through Transversus Abdominus Release for the treatment of Midline Incisional Hernia

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ABSTRACT

Background: Posterior Component Separation through Transversus abdominus Muscle Release (PCS-TAR) is considered as a better option for Abdominal Wall Reconstruction (AWR) during large ventral wall IH repair as it has advantage over both Rives-Stoppa (Retro muscular) repair and Anterior Component Separation (ACS) repair in avoiding injury of the nerve supply to rectus muscle, and in the ability to achieve more lateral dissection, providing better quality of life (QoL).

Aim of work: to evaluate 30-day post operative outcome of PCS-TAR regarding both; Visual Analogue Scale (VAS) and Surgical Site Occurrence (SSOs) classification provided by Ventral Hernia Working Group (VHWG) in 2010.

Patients and methods: This prospective observational study was conducted to 30 patients who have a midline incisional hernia with defect size ≥ 10 cm in widest diameter (W3) and underwent IH repair through (PSC-TAR) after routine laboratory investigations, abdominal ultrasonography, and CT. Informed consent was taken from all cases. Results were reviewed and evaluated.

Results: Out of 30 patients, 13 patients (43.3%) developed SSOs. 3 patients (10%) developed cellulitis. 3 patients (10% of patients) presented with superficial infection. Seroma occurred in 5 patients (16.7%) 3 of which (10%) developed complicated seroma that needed procedural intervention (SSOpi). Hematoma was observed in 2 patients (6.7%).

Conclusion: Retro muscular, Rives Stoppa technique and ACS are comparable to PCS-TAR regarding patient reported outcomes (PROs). However, PCS-TAR still has resulted in a better quality of life (QoL). The outcome of PCS-TAR is still better even in the presence of comorbidities such as high BMI, DM, and COPD.

Keywords: Posterior Component Separation through Transversus Abdominis Release, Incisional Hernia Repair, Surgical Site Occurrence.

LIST OF ABBREVIATIONS

Abbr.		Full term
ACS	**:**	Anterior Component Separation
ACS	**:**	Abdominal Compartmental Syndrome
ACT	**:**	Abdominal Computerized Tomography
AWF	**:**	Abdominal Wall Function
AWR	**:**	Abdominal Wall Reconstruction
CVH	**:**	Complex Ventral Hernia
EHS	**:**	European Hernia Society
EO	**:**	External Oblique muscle
IAP	**:**	Inter Abdominal Pressure
IH	**:**	Incisional Hernia
IO	**:**	Internal Oblique muscle
LOD	**:**	Loss Of Domain
OACS	**:**	Open Anterior Component Separation
PCS	**:**	Posterior Component Separation
PRO	**:**	Patient Reported Outcome
PSACS	**:**	Perforator Sparing Anterior Component Separation
QoL	**:**	Quality of Life
RA	**:**	Rectus Abdominis muscle
RR	**:**	Recurrence Rate
RR	**:**	Retro Rectus
SSE	**:**	Surgical Site Events
SSO	**:**	Surgical Site Occurrence
SSO	**:**	Surgical Site Infection
SSOpi	**:**	Surgical Site Occurrence need procedural intervention
TA	**:**	Transversus Abdominis muscle
TAR	**:**	Transversus Abdominis Release
VAS	**:**	Visual Analogue of Pain
VHWG	**:**	Ventral Hernia Working Group
W	**:**	Width

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INTRODUCTION

Incisional Hernia (IH) is defined as a gap in the abdominal wall, with or without a bulge associated with a surgical scar which is palpable by clinical examination and or imaging. ***(Korenkov et al.,2001***). It is one of the common iatrogenic complications following abdominal surgery with incidence up to 11-20% ***(Kumar DS et al., 2017).***

IH is considered as a surgical complication of considerable morbidity, as it is being associated with pain, aesthetic disfigurement, and most importantly impaired quality of life (QoL) especially young adults & middle-aged individuals ***(Deshmukh et al., 2017); (Santoshkumar N, et al., 2017), (Brunicardi FC, et al., 2010).***

There is no etiological factor could be linked directly to the development of IH; however, there are multiple factors that lead to development of IH. The predisposing causes of midline IH include obesity, bad wound healing, which itself depends on factors like suture integrity, nutritional status of patient and presence of infective organisms in the patient's body (Shukla A et al., 2018). Also, multiple previous abdominal surgeries, and inadequate surgical technique are considered of such causes ***(Brunicardi FC et al., 2010).***

The main principle of IH repair is a tension-free closure of the defect while ensuring there is no significant increase in the intra- abdominal pressure. Based on that, many different techniques have been adopted to achieve such tension- free repair. However, these techniques have their own limitations, and complications which range from failure to get proper fascial closure with adequate mesh enforcement, up to significant increase in postoperative surgical site occurrence. ***(Munegato et al., 2017).***

Classically, IH repair with mesh was first introduced by Usher who provided knitted monofilament polypropylene (Marlex) mesh into clinical practice in 1963, which is still the most widely used prosthetic material. In 1972, Gore et al developed polytetrafluoroethylene (PTFE) and it is gaining popularity because of its apparent reduced tissue reaction. It consists of relaxing incisions in the anterior rectus sheath with primary approximation of the linea alba and medial turnover of the anterior rectus sheath followed by mesh placement. The disadvantages are that it requires wide undermining of tissue, which may predispose the patient to wound-related complications, and that less pressure is required for disrupting the mesh from the anterior abdominal wall than that of other repair procedures**.** ***(Choi Y. et al, 2018)***

One of the most common and successful repair of midline IH is the Retro muscular repair, originally described by Rives and Stoppa, and modified by Wantz. (***Stoppa R, et al., 1973), (Rives J, et al., 1985)., (Wantz GE., 1998).*** However, the main limitation of the retro muscular Rives – Stoppa - Wantz repair is the inability to achieve tension free repair in large defects***. (Rheumtulla IA. et al 2018).*** It is considered durable technique for ventral hernia defects, and completely avoids subcutaneous flap elevation. But technically requires developing the space dorsal to the rectus abdominis muscles up to the edge of the rectus sheath. In the average patient (70 kg), this affords a 6–8 cm lateral space on each side of the midline. Repair of large IH defects with diameters > 15 cm may require a larger mesh overlap than can be afforded by this dissection which is limited to the lateral border of the rectus sheath ***(Carbonell AM, et al., 2008).***

One of the common techniques for repair of IH is Anterior component Separation (ACS); was first described by Ramirez et al. in 1990***, (Ramirez et al 1990),*** (***Hodgkinson J.D. et al., 2018),*** and is based on the concept of re-establishing a functional abdominal wall with autologous tissue repair. The procedure involves dividing the relatively fixed external oblique aponeurosis and muscle, elevating the rectus abdominis muscle from its posterior rectus sheath, and then mobilizing the myofascial flap consisting of the rectus, internal oblique, and transversus

abdominis medially (***Switzer NJ, et al., 2015).*** However, ACS technique has its own complications and limitations such subcutaneous dissection was complicated with seromas, wound infections and abscess formation which could be reduced by using minimally invasive ACS, such as perforator sparing (PSACS) or endoscopic techniques, but these techniques are not possible in all cases. The lateral area of dissection where the External Oblique (EO) tendon has been divided, can develop a bulge or lateral abdominal wall hernias, which once occurs, there is no possibility of further ACS to be done. The use of mesh reinforcement has been described with open Anterior Component Separation (OACS) and their use in combination is thought to be safe and recommended in current guidelines in certain situations, such as significant loss of domain (LOD). ***(Group VHW 2010).***

To overcome these limitations, a novel technique was described by Novitsky et al (2012), which is based on extension of the original Rives-Stoppa-Wantz retro muscular space by dividing the Transversus Abdominis muscle (TA) muscle based on introducing of a new concept regarding abdominal wall anatomy, which demonstrates the extension of the TA muscle far beyond the limit of linea semilunaris medially. ***(Novitsky et al, 2012).*** Since that time, the technique is being known as Posterior Component Separation through Transversus Abdominal Release (TAR) and still getting more popular ***(Novitsky et al, 2016).***