Different and Recent Trends of Anterior Abdominal Wall Reconstruction

Essay

Submitted in partial fulfillment for the
Master Degree in General surgery

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2013


بسم الله الرحمن الرحيم
وفِي الأَرْضِ آيَاتٌ
لِّلْمُوقِنِينَ (20) وفِي أَنفُسِكُمْ أَفَلا
تُبْصِرُونَ (21)
صدق الله العظيم
سورة الذاريات الآيتان (21، 22)

Acknowledgement

First of all, all gratitude is due to ***God*** *almighty for blessing this work, until it has reached its end, as a part of his generous help, throughout my life.*

Really I can hardly find the words to express my gratitude to ***Prof. Dr. Tarek Ismail Ouf*** *Professor of General Surgery, faculty of medicine, Ain Shams University, for his supervision, continuous help, encouragement throughout this work and tremendous effort he has done in the meticulous revision of the whole work. It is a great honor to work under his guidance and supervision.*

I would like also to express my sincere appreciation and gratitude to ***Dr. Mohamed Ahmed Amin Saleh*** *Lecturer of Plastic Surgery, faculty of medicine , Ain Shams University, for his continuous directions and support throughout the whole work.*

My heartiest thanks to ***Islam Hossam Eldine Salah Eldine Elabbassy*** *Lecturer of General Surgery, Faculty of Medicine, Ain Shams University, whose encouragement, expert guidance and support from the initial to the final level of this work.*

Last but not least, I dedicate this work to my family, whom without their sincere emotional support, pushing me forward this work would not have ever been completed.

Ahmad Maher Ahmad Younis

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List of Abbreviations

ACS	:	Abdominal compartment syndrome
CT	:	Computed tomography
CVP	:	Central venous pressure
DFSP	:	Dermatofibrosarcoma protuberans
DIEA	:	Deep inferior eigastric vessel
IAP	:	Increased intrabdominal pressure
ICU	:	Intensive care unit
ISA	:	Intermediate staphylococcus aureus
LDM	:	Latissimus Dorsi Muscle Flap
NF	:	Necrotizing fasciitis
PAWP	:	Pulmonary artery wedge pressure
PEEP	:	Positive end-expiratory pressure
SSI	:	Surgical site infection
STS	:	Soft tissue sarcomas
STSG	:	Split thickness skin graft
STSG	:	Split thickness skin grafts
TFL	:	Tensor Fascia Lata Flap
TFL	:	Tensor fascia lata myocutaneous flap
TRAM	:	Transrectus abdomens myocutanus flap
VAC	:	Vacuum-assisted closure technique

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Introduction

The management of complex abdominal wall defects has challenged surgeons since the turn of the last century. The increasing complexity of the abdominal wall defects and the development of techniques involving manipulation and mobilization of muscle and myocutaneous flaps have drawn on the expertise of the surgeon ***(Ferzoco, 2011).***

The goals of the surgeon in managing complex abdominal wall defects are to restore the structural and functional continuity of the musculofascial system and to provide stable and durable wound coverage to prevent herniation and protect the intraabdominal structures. The Choice of particular procedure depends on the clinical situation and the patient's individual profile ***(Germann et al., 2000)***.

The anterior abdomen represents the portion of the trunk between the thorax and pelvis. It is a complex anatomic and functional system comprising: skin, superficial fascia, muscles, transversalis fascia, extraperitoneal adipose tissue and peritoneum ***(Stanley, 2008).***

There are many risk factors for the patients having anterior abdominal wall defects which add to the complexity

of management. This increase has been attributed to the growing age of the population, increasing rates of obesity and diabetes, improved survival from intra-abdominal cancers, improvements in care of the critically injured patient, yielding greater survival of patients following abdominal catastrophe and connective-tissue disorders such as Ehlers-Danlos syndrome ***(Franz MG.2011).***

The abdominal wall reconstruction is indicated in many clinical situations. These situations include: Trauma or blast injuries, congenital defects (Omphalocele, Gastroschisis or Exstrophy), acquired defects after tumor resection (Desmoid tumor, intra abdominal sarcoma), incisional hernia and post burn or radiation deformities ***(Koshy et al., 1999).***

Preoperative assessment entails detailed analysis of the patient history, clinical examination to properly identify the size, location, depth and contamination of the defect that will influence the way of reconstruction. Meticulous operative technique and postoperative care are other considerations that offer reasonable functional, aesthetic outcomes and acceptable complication rates ***(Trier, 1990)***.

There are different techniques for abdominal wall reconstruction including primary closure that used in Partial thickness defects or full thickness defects less than 5 cm. Use

of local tissues may be feasible as in Components Separation Technique that allows closure of abdominal wall defects through fascial incisions with sequential advancement of tissue while providing dynamic support and continuity to the abdominal wall ***(Ramirez, 2006)***.

Skin grafts could be used as coverage way. The cosmetic outcome is not accepted by most of the patients rendering the skin graft as a temporary coverage option ***(Shaw et al., 1990).*** Abdominal wall reconstruction with autologous fascia lata grafts are indicated when there is exposed mesh and enteric fistulae ***(Gopinathan, 2006)***.

Flaps are an option for reconstruction .but where is many type and indication for each. Local flaps as Fasciocutaneous flap ***(Nahai; 2005)***.

Fasciocutaneous flaps include the *thoracoepigastric flap* and the *iliolumbar bipedicled flap* for the middle third of the abdominal wall. The lower third of the abdomen may be reconstructed with the *groin flap*, which has a large arc of rotation and The *superficial inferior epigastric artery flap* that can provide a large soft tissue island for coverage, and the *extended deep inferior epigastric flap* that is good for defects of the lower abdomen and groin ***(Grotting et al., 2009).***

Local muscle flaps are ideal for partial myofascial

defects of the lateral abdominal wall. The *rectus abdominis* is often the flap of choice for such lateral defects ***(Lowe et al., 2006)***.

Distant flaps used in larger partial myofascial and complete defects not amenable to components separation or local flaps. *Tensor fascia lata flap (TFL)* is a reliable flap used to repair defects of the lower two thirds of the abdomen. Free flaps for abdominal wall reconstruction are considered only as a last resort in the reconstructive ladder. They are indicated in abdominal wall reconstruction when there is full thickness defect of moderate to large size, especially if it extends across the midline ***(Proshinsky and Ramasatary, 2006).***

Prosthetic materials are ideal for reconstructing larger, clean abdominal wall defects. They allow the surgeon to maintain domain, provide support, and protect the intra-abdominal contents and tissue expanders can be used as part of delayed staged reconstruction which provides good esthetic and pliable coverage ***(Gopinathan, 2006)***.

Finally the reconstruction of anterior abdominal wall is challenging surgical problem that need multidisciplinary approach including: the general surgeon, plastic surgeon, physiotherapist, nutrition doctors and sometimes the intensive care doctors.