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Jon Simmons *Editors*

Plastic Surgery

A Problem Based Approach

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Foreword

The surgical trainee is required to assimilate an ever increasing amount of knowledge and for the plastic surgeon this covers a wide area. Consequently, it can sometimes be difficult to maintain attention on the fundamentals of patient assessment. This book aims to bring the focus back on the patient by providing an algorithmic approach to taking a history, examination and formulating a management plan. This refreshingly different clinical problem-based style makes it easy to read. At the end of every chapter the authors provide some key references for further reading.

The book should appeal to the early years trainee as well as to those preparing for clinical examinations

Preface

Plastic surgery is a big subject and the size of traditional textbooks reflects this. This book was conceived as something different. Instead of a top-down, subject-by-subject approach, we wanted a bottom-up approach, with the starting point being a patient with a problem. The stimulus for this method was lack of any decent texts for the clinical sections of the professional exams in plastic surgery FRCS Plast in the UK, boards in the USA and their equivalents in other parts of the world). The chapters were written with the concept of a patient sitting in front of the reader, as there would be in the exam situation. However the same approach works when one first sees a patient in the clinic. We aimed to provide the reader with the structure and information necessary to be successful in their careers. We have used our experience to ensure the text is as succinct and relevant as possible. We hope we have achieved this in some way and that this book forms a useful adjunct to more traditional texts.

Many have contributed to the book and we would like to thank them for their hard work and effort. SH would particularly like to thank Jon Simmons for getting us across the finish line; it would not have happened without him and his dogged determination. Finally, we would like to thank our patients from whom we have learnt everything that is in this book.

Shehan Hettiaratchy
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Abbreviations

a-FP	Alpha-Fetoprotein
ADL	Activities of Daily Living
AP	Antero-Posterior
ATLS	Advanced Trauma Life Support
BAHA	Bone Anchored Hearing Aid
BCC	Basal Cell Carcinoma
BMI	Body Mass Index
BOS	Base of Skull
BPI	Brachial Plexus Injury
BRCA 1/2	Breast Cancer Susceptibility Protein (type 1 or 2)
CMCJ	Carpometacarpal Joint
CP	Cerebral Palsy
CRS	Constriction Ring Syndrome
CSF	Cerebrospinal Fluid
DBUN	Dorsal Branch of Ulnar Nerve
DCIS	Ductal Carcinoma In-Situ
DIC	Disseminated Intravascular Coagulopathy
DIEP	Deep Inferior Epigastric Artery Perforator
DM	Diabetes Mellitus
DN	Digital Nerve
DRUJ	Distal Radio-Ulnar Joint
DVT	Deep Venous Thrombosis
EAM	External Auditory Meatus
ECG	Electro-Cardiograph
EPL	Extensor Policis Longus
FBC	Full Blood Count
FCU	Flexor Carpi Ulnaris

FDP	Flexor Digitorum Profundus
FDS	Flexor Digitorum Superficialis
FHx	Family History
FNA(C)	Fine Needle Aspiration (Cytology)
FPL	Flexor Policis Longus
FSH	Follicle Stimulating Hormone
FTSG	Full Thickness Skin Graft
FTT	Failure to Thrive
g-GT	Gamma-Glytamyl Transpeptidase
GA	General Anaesthetic
GI	Gastro-Intestinal
GnRH	Gonadotropin Releasing Hormone
hCG	Human Chorionic Gonadotropin
HLA	Human Leukocyte Antigen
IDDM	Insulin Dependant Diabetes Mellitus
IGAP	Inferior Gluteal Artery Perforator
IMF	Inframammary Fold
IPJ	Interphalangeal Joint
IVDU	Intravenous Drug User
IVI	Intravenous Infusion
Lat	Lateral
LH	Luteinising Hormone
LMN	Lower Motor Neuron
LS	Lichen Sclerosus
MCN	Musculocutaneous Nerve
MPJ/MCPJ	Metacarpophalangeal Joint
MRD	Marginal Reflex Distance
NAC	Nipple Areolar Complex
NSAID	Non Steroidal Anti Inflammatory Drugs
NVB	Neurovascular Bundle
OPG	Orthopantomogram
ORIF	Open Reduction and Internal Fixation
PCMN	Palmar Cutaneous Branch of Median Nerve
PE	Pulmonary Embolus
PET	Positron Emission Tomography
PIPJ	Proximal Interphalangeal Joint
PIN	Posterior Interosseous Nerve
PVD	Peripheral Vascular Disease

RCT	Randomised Controlled Trial
ROM	Range of Movement
SCC	Squamous Cell Carcinoma
SGAP	Superior Gluteal Artery Perforator
SSG	Split Skin Graft
T4	Thyroxine
TMG	Transverse Myocutaneous Gracilis Flap
TNF	Tumour Necrosis Factor
TOCS	Thoracic Outlet Compression Syndrome
TPF	Temperoparietal Fascia
TRAM	Transverse Rectus Abdominis Myocutaneous
TSH	Thyroid Stimulating Hormone
U+E	Urea and Electrolytes
UCL	Ulnar Collateral Ligament
UMN	Upper Motor Neuron
USS	Ultrasound Scan
VAC	Vacuum Assisted Closure
XR	X-Ray

Chapter 1
Abdominoplasty

Robert Caulfield and Shehan Hettiaratchy

Refers to excision of excess skin and subcutaneous fat from anterior abdominal wall +/– rectus plication.

Recognition

Cosmetic patients are usually female, middle aged, or present post pregnancy with abdominal striae and excess skin. Massive weight loss patients can be either male or female and any age (Fig. 1.1).

History

General introduction
Age, occupation, recent pregnancy/childbirth, interference with lifestyle, relationships, clothing and occupation, diabetes, hypothyroidism.

Specific abdomen

- Is patient's weight stable? (*only operate if weight definitely stable*)
- Have they achieved their target weight/BMI?

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Figure 1.1 Pre-operative candidate for abdominoplasty

- Any previous abdominal surgery: Laparoscopy, laparotomy, hernia repair, appendix, open cholecystectomy, hysterectomy, etc.
- Any previous cosmetic abdominal surgery (beware, often these patients will have had previous aesthetic abdominal procedures, e.g., extensive liposuction (implications for blood supply to abdominal pannus) or previous abdominoplasty and will come to clinic with high aesthetic expectations).
- Previous pregnancies, with particular emphasis on whether normal delivery or c-section
- Any current symptoms/signs of abdominal herniae
- Psychological effects of excess abdominal tissue
- Patient's expectations of outcome achieved by surgery
- Awareness of risks and complications associated with surgery

Risk factors

- Multiple previous pregnancies, particularly if more than one c-section (with multiple pregnancies the abdominal wall layers may be very loose/stretched, thus reducing effectiveness and outcome possible with surgery; also risk of bowel/bladder injury with multiple c-sections in the past)
- Previous aesthetic abdominal surgery, particularly extensive liposuction (quite common in these patients, hence risk to blood supply of abdominal pannus)
- Any history of GI or respiratory problems (this can potentially interfere with post-op recovery/mobilisation and increase risk of complications)
- Smoking
- Medication (aspirin, NSAIDs, herbal medications, anticoagulants
- Bleeding tendencies
- Hypertension
- Diabetes
- BMI>30 (known association with increased complications – so used by NHS trusts to rationalise treatment)

General

Full medical and drug history

- Must consider co-existing morbidities relative to risks of procedure (as essentially a cosmetic procedure, in both the pure aesthetic and the massive weight loss cases)
- Family completed or whether planning further children (particularly if you plicate the rectus. Although *Menz, PRS 1996* implies that pregnancy is still possible, but requires close monitoring. Need to discuss this carefully with pre-menopausal female patients pre-op)
- Any psychological issues (i.e., is patient requesting surgery for genuine reasons, as above)
- Occupation and sporting hobbies (as this may interfere with these)

- Any drug allergies
- Medications (as above)
- BMI (weight must be stable)
- Smoking (associated with increased risk of wound breakdown/delayed healing)

AIM: By the end of history you should know

1. Extent of patient's symptoms from the excess abdominal pannus
2. Need for additional investigations/ treatment of any co-morbidities prior to GA
3. Patient's awareness of risks/complications
4. What the patient hopes to achieve
5. Chances of surgery meeting these objectives

Examination

Look
Evidence of general obesity. Any overt signs of other significant co-morbidities

- Skin quality and laxity
- Any striae (particularly if supraumbilical, as patient needs to be informed that these will still be present post-op)
- Any scars from previous surgery or c-section. (N.B. make sure to check for very small laparoscopic scars around umbilicus, as these will potentially compromise viability of umbilicus and often patients do not volunteer details about previous laparoscopy – as they consider it a test/ investigation rather than surgery)
- Obvious hernia and bulges
- Whether significant supraumbilical component of excess tissue (i.e., possible Fleur De Lys approach required)

Feel/move
Need to have an idea about the different components of abdominal wall and how you will approach them

- Skin quality and laxity, including scars (both above and below umbilicus)
- Fascial system laxity, i.e., adherence of skin fat to anterior rectus sheath – as this will influence outcome achieved by surgery (both above and below umbilicus)
- Distribution of fat (whether liposuction also required – both above and below umbilicus)
- Tone of abdominal wall, including divarication of recti and any herniae (both above and below umbilicus)

AIM: By the end of examination

1. Identified any previous unknown abdominal pathology which may require investigation/treatment
2. Have decided on most appropriate technique/combination of techniques
3. Have an idea of any problem areas patient wishes to address
4. Awareness of patient's expectations about outcome
5. Willingness of patient to accept downtime and scar maturation period

Investigations

- Routine bloods: FBC, U + E's, Coag, Group and Save
- Depending on co-morbidities, may also need chest X-ray, ECG, etc.

Treatment/Surgical Technique

Depends on examination findings and patient's expectations about outcome, downtime and willingness to accept risks/complications.

Bearing this in mind the surgical options generally depend on the amount each of the different components of abdominal wall are contributing to the overall problem (*Matarasso classification*), as in examination section above. Surgeon

preference for scar placement, plication technique and simultaneous liposuction also play a role.

Contribution according to abdominal wall components	Treatment options
Excess fat only	Nothing or liposuction alone
Mild excess skin and fat, no fascial laxity, +/– divarication below umbilicus	Mini-abdominoplasty +/– plication
Moderate excess skin, fat, +/– fascial laxity +/– divarication above and/or below umbilicus	Full abdominoplasty and plication +/– liposuction
Significant excess skin, fat, fascial laxity and divarication	Full abdominoplasty and plication +/– liposuction

Risks/Complications

General

- Risks of GA including DVT/PE/chest infection
- Haematoma
- Drains

Specific

- Wound breakdown/delayed healing
- Decreased or increased sensation in abdominal skin
- Asymmetry, inadequate correction of excess pannus
- Bowel injury (unlikely – but take care when blindly plicating, particularly with round bodied needle)
- Hypertrophic scars (particularly centrally due to excess tension in closure)
- Keloid scars (should avoid these by counselling patient pre-op against surgery)
- Dog ears (particularly laterally – this is often due to deficiencies in pre-op markings, most surgeons will try to address this intra-op with either excision or liposuction)