



伤口缝合手册

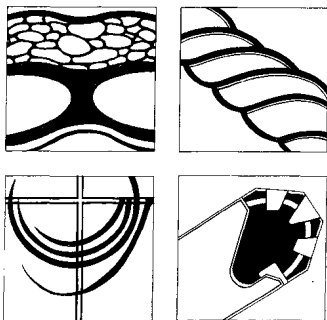
WOUND CLOSURE MANUAL

爱 惜 康
ETHICON

 合作的价值
THE VALUE OF WORKING TOGETHER

馆

ETHICON WOUND CLOSURE MANUAL



伤口缝合手册

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A MESSAGE TO READERS

This manual has been prepared for the medical professional who would like to learn more about the practice of surgery — the dynamics of tissue healing, the principles of wound closure, and the materials available to today's practitioners. Most important, it touches upon some of the critical decisions which must be made on a daily basis to help ensure proper wound closure.

At ETHICON, INC. we have the utmost respect for the life-saving work of surgical practitioners everywhere — in major medical centers and in small hospitals and clinics alike — and we take great pride in assisting them.

We hope that this manual will answer many of your questions. But, above all, we hope that it reflects our high regard for the men and women who have chosen the medical profession as a career.

ETHICON, INC.

敬告读者:

本手册奉献给对外科学实践(组织创伤愈合动力学, 创伤缝合原则以及现有缝合材料等)勇于潜心求索的医务工作者。更重要的是,它涉及到了日常工作中为确保创伤有效缝合所必须解决的一些至关重要的问题。

ETHICON公司对那些分布在世界各地主要的医疗中心和小型医院、诊所内从事着救死扶伤工作的外科手术人员致以最崇高的敬意。能为他们提供帮助足以使我们感到无比自豪。

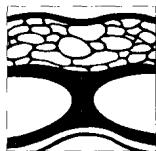
我们期望本手册将能成为不断探索未知的人们的良师益友,但首先期望的是它能够体现出我们对那些把毕生精力都投入到医学领域的人们的极大关注。

ETHICON公司



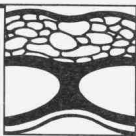
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***RESTORING
WOUNDED
TISSUE***



愈复中的损
伤组织

1



RESTORING WOUNDED TISSUE

TISSUE STRENGTH

Tissue may be defined as a group or layer of similarly specialized cells which, together, form specialized functions.¹ The various kinds of tissue throughout the body have different inherent properties which determine their functions, as well as their strength and resistance to tearing. The parameters

THE WOUND

A DEFINITION

On a playground, a six year old boy has fallen on a jagged rock and torn his knee. It will require ten stitches to close the laceration.

In an operating room, a surgeon has made a precise incision on the abdomen of a seventy year old woman with cancer.

As disparate as these two scenes may seem on the surface, the boy and the woman share a common experience. They have both sustained *wounds* that must be mended.

Whether inflicted by chance, or sustained during a surgical procedure, every wound is simply a disruption of the normal continuity of tissue.¹ When tissue has been disrupted so severely that it cannot heal naturally (without complications or possible disfigurement) it must be repaired by a skilled surgeon.

In this section, we will cover the attributes of tissue, and the various types of wounds that may be encountered.

for measuring the strength of normal body tissue are:

■ **Tensile strength** —

The load per cross-sectional area unit at the point of rupture² — relating to the nature of the material rather than its thickness.

■ **Breaking strength** —

The load required to break a wound — regardless of its

dimension² — the more clinically significant measurement.

■ **Burst strength** —

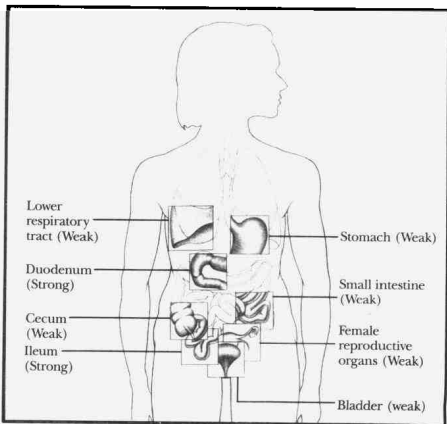
The amount of pressure needed to rupture a viscus, or large interior organ.

Tensile strength affects the tissue's ability to withstand injury but is not related to the length of time it takes the tissue to heal. While the skin and fascia (the

FIG.

1

Relative Tissue Strength



伤口

定义：

一位十岁的男孩在操场上被一块粗糙的石块绊倒，跌破了膝盖。修补伤口需要缝十针。

手术室内，外科医生为一位七十岁高龄的老年女性癌症患者在腹部作了一个精细的切口。

尽管表面上看来这两种情景各不相同，但这位男孩和妇女都经历了一种相同的感受，即他们都蒙受了需要弥合的创伤。

不论是意外蒙受的抑或手术过程中造成的，简单意义上讲，每一种损伤都是对组织连续性的破坏。当组织损伤非常严重超过了组织自然愈合能力（不伴有并发症或可能的外形损害）时，就需要一位技能娴熟的外科医生对其进行修复。

本章节将对人体的组织特征以及可能遇到的各种伤口加以论述。

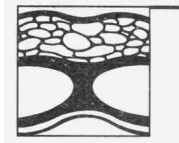
组织的强度

组织可以被定义为一组或一层类似的特殊细胞，这些细胞的组合形成特殊的功能¹。体内各种类型的组织都具有其各自的固有特性，这种特性决定了组织的功能、组织的强度以及对抗外力撕裂的能力等。用于

衡量正常人体组织强度的指标有：

■ **抗张强度**—指破裂点单位横断面上的负荷²。其大小与材料的性质有关而不是它的厚度。

■ **断裂强度**—指足以断裂组织，形成伤口所需要的负荷²。这项指标并不



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修复创伤组织

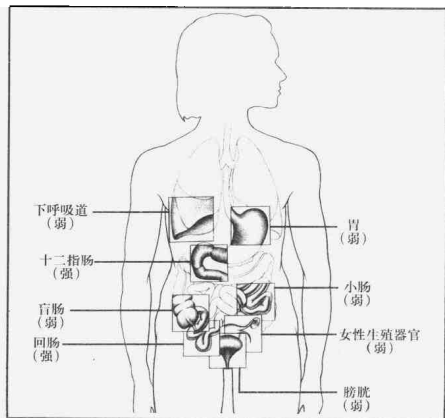
涉及临床价值很大的伤口面积与深度。

■ **爆裂强度**—指使某个内脏或大的内部器官破裂所需要的压力。

抗张强度能够影响组织抗损伤的能力，但与组织愈合所需要的时间无关。尽管皮肤和筋膜（被覆肌肉的

图 1

相对组织强度



layer of firm connective tissue covering muscle) are the strongest tissues in the body, they regain tensile strength slowly during the healing process. The stomach and small intestine, on the other hand, are composed of much weaker tissue but heal rapidly. Variations in tissue strength may also be found within the same organ. Within the colon, for example, the sigmoid region is approximately twice as strong as the cecum — but both sections heal at the same rate.

Factors that affect tissue strength include the size, age, and weight of the patient, the thickness of the tissue, the presence of edema, and induration (the degree to which the tissue has hardened in response to pressure or injury).

THE RESPONSE OF TISSUE TO INJURY

In response to injury of any kind, including surgical incision, natural defense mechanisms immediately come into play to

restore the integrity and strength of the tissue involved. These cellular activities may be broken down into three distinct phases.

Phase 1 — During the first few days, an inflammatory response causes an outpouring of tissue fluids, an accumulation of cells and fibroblasts, and an increased blood supply to the wound. Leukocytes and other cells produce proteolytic enzymes which dissolve and remove damaged tissue debris.

Phase 2 — After the debridement process is well along, fibroblasts begin to form collagen fibers in the wound. Collagen, a protein substance, is the chief constituent of connective tissue. Collagen fiber formation determines the tensile strength and pliability of the healing wound.

Phase 3 — In time, sufficient collagen is laid down across the wound so that it can withstand normal stress. The length of this phase varies with the type of

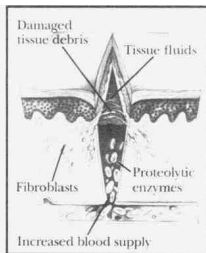
tissue involved and the stresses or tension placed upon the wound during this period.

CLASSIFICATION OF WOUNDS

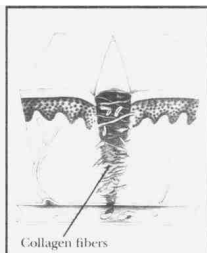
Operative wounds fall into four categories, based upon a clinical estimation of microbial contamination and the risk of subsequent infection.

Clean wounds — 75% of all wounds (which are usually elective) fall into this category. These elective incisions are made under sterile conditions and are not predisposed to becoming infected. Inflammation is a natural part of the healing process. Clean wounds are closed by primary union and are not usually drained. (*Primary union* is the most desirable method of closure, involving the simplest surgical procedures and the lowest risk of postoperative complications.) No break in aseptic technique occurs during the procedure. The surgeon does not enter the

FIG. 2 Tissue Response to Injury



PHASE 1 —
Inflammatory response and debridement process



PHASE 2 —
Collagen formation (scar tissue)



PHASE 3 —
Sufficient collagen laid down

坚固结缔组织层)是体内最为强韧的组织,它们在创伤愈合过程中恢复抗张强度的速率却较为缓慢。相反,胃和小肠虽由抗张强度较弱的组织构成,其愈合过程较快。即使在同一器官内,组织强度亦有差异,譬如在结肠,乙状结肠区组织强度大约是盲肠的二倍,但二者创伤愈合的速率却完全不同。

影响组织强度的因素包括:体型,年龄,患者体重,组织厚度,有无组织水肿、硬变(对压力或损坏反应组织变硬的程度)等。

组织对损伤的反应

一旦各种损伤因素(包括外科切口)对机体产生影响,体内的自然防御机制即

迅速发挥作用以恢复受损区组织的完整性和组织强度。这些细胞活动可以被分成三种不同的阶段:

I期:在开始的几天内,炎症反应引起组织液的外渗、炎症细胞和纤维母细胞的聚集以及损伤区血供量的增加等。白细胞和其它细胞产生蛋白分解酶溶解并清除受损的组织碎片。

II期:随着组织碎片的逐渐清除,纤维母细胞开始合成胶原纤维。胶原(一种蛋白质)是结缔组织的主要成分。胶原纤维的形成决定了伤口愈合过程中抗张强度和柔韧性的恢复。

III期:此时,已有足够的胶原于伤口内交织分布,使得受损区能够耐受正常的压力。III期阶段的长短随

受损组织的类型以及该期伤口所负压力或张力的不同而有所差异。

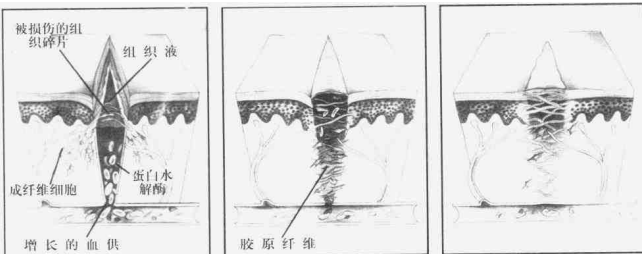
伤口的类型

根据伤口内有无微生物污染以及继而可能出现感染机率的高低,手术伤口可分为以下四种类型:

清洁伤口:占通常选择性伤口的75%。由于这种伤口是在无菌情况下选择性地切开的,所以,不易发生感染。炎症反应是伤口愈合的一种自然过程。清洁伤口通过一期愈合即可修复而无需进行引流处理(一期愈合是伤口闭合的最佳方式,手术操作简便,术后并发症少)。手术不违反无菌操作原则。不切开口腔、呼吸道、消化道或泌尿生殖

图2

组织对损伤的反应



I期: 炎症反应及过程

II期: 胶原形成(疤痕组织)

III期: 多量的胶原沉积