

Quintessentials

口腔临床要点快速掌握系列

· 中英文对照 ·

8

牙髓治疗失败的临床对策

Managing Endodontic Failure in Practice

► Bun San Chong [编 著]

► 刘 原 [主 译]

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Managing Endodontic Failure in Practice

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内容提要

“口腔临床要点快速掌握系列”是国际著名的Quintessence出版社近期出版的介绍口腔各科基本技术和最新医学理论的专业丛书。该丛书自2002年起陆续出版发行，我社第一时间引进，以便国内学者同步了解国际口腔技术发展的新进展。随着口腔技术的发展和根管技术的普及，牙髓治疗失败的病例在临床上愈来愈常见，牙髓治疗失败后的处理已成为每一位中高级口腔医师必备的技能。本书由国际知名口腔医学专家编写，一切从临床实践出发，通过大量实例和图片，深入浅出地讲解了非手术和手术牙髓再治疗的基本理论和最基本、最重要、最实用的操作技术。本书采用了中英文对照的编排方式，对提高读者的专业英语水平大有裨益。本书适合临床口腔科医师、技师和口腔医学生阅读。

责任编辑 杨 淮 韩 志

序

随着大量新材料、新技术以及新设备的出现，牙髓治疗也越来越趋向于复杂多样，相应地，对处理牙髓治疗失败的要求也越来越高。处理牙髓治疗失败，对临床医生来说，是一个复杂的挑战。如果能够成功地处理牙髓治疗失败的患牙，对临床医生来说是极大的勉励和宝贵的经验。

本书旨在论述“何时”和“怎样”保留治疗不成功的患牙，从诊断到评估牙髓再次治疗的成功，本书就是要让牙髓病学医生尽快地了解最新的理论、技术，并与学科发展同步。

本书通俗易懂，读者能很轻松地获取到有价值的临床经验，结合大量清晰的图片，使本书成为一本真正高质量的精品图书。本书是“口腔临床要点快速掌握系列丛书”中的又一本优秀著作。对于在临床遇到各种各样牙髓治疗失败病例的医生，想要得到进一步的提高，本书无疑是一本值得一读的好书。

主 编 Nairn Wilson

前 言

随着在口腔医学的不断进步以及患者态度的转变，对于仅仅因为根尖周炎和牙髓治疗失败就要拔除患牙，无论是医生还是患者现在都不能接受。理论和技术的进步已经极大地促进治疗的发展，但在临床上，并不总是达到理想的治疗效果。如最初的治疗失败，就需要医生掌握必要的知识和技术，并采取措施保存患牙。治疗要基于临床表现，因此在再治疗时，医生更要注意，在尝试进行非手术再治疗之前，不要轻易就对牙髓治疗失败的患牙采取手术治疗。本书的目的就是为临床医生提供处理牙髓治疗失败的生物学原则和临床技术。最后，希望本书的内容能够为临床医生在处理牙髓治疗失败时，提供理论基础和临床帮助。

详细的治疗计划是成功治疗必不可少的，因此本书的一个重要内容就是详细阐述病例的评估和选择。本书一些相关的观点会不可避免地有一些重复。对于种类繁多的再治疗病例，有很多可采用的技术，本书不可能全部涵盖。因此，本书重点在于阐述诊治原则以及与临床相关的常规技术，也重点介绍了一些先进的技术。为了实践再治疗技术，鼓励医生多参加可以动手操作的进修课程。

Bun San Chong

献 辞

感谢我的家人 Grace、James 和 Louisa，在我写这本书的时候，不能常常在他们的身边，谢谢他们的理解和支持。谢谢 Monica，谢谢她的帮助和照顾。

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第 1 章 成功和失败的概念

Defining Success and Failure

目 的

回顾用于评价牙髓治疗疗效的方法，阐明关于牙髓治疗成功率报道存在差异性的原因以及描述牙髓治疗成功与失败的标准。

要 点

在学习本章后，术者应该理解如何界定成功和失败的概念，了解评估治疗疗效的过程，以及确定再治疗的原则。

术 语

牙髓治疗这一专业术语涵盖所有牙髓病和根尖周疾病的治疗。根管治疗作为一种特效的治疗方式已广泛应用于牙髓病，主要治疗不可逆性牙髓损害，或者由于外伤和病损所造成的牙髓活力改变等。虽然牙髓治疗和根管治疗存在差异，但在本书中，仍认为这两个术语可互换使用。

Aim

To review the methods of evaluating the outcome of endodontic treatment, explain the reasons for reported variations of success rate and describe the criteria for success and failure.

Outcome

After studying this chapter, the practitioner should have an understanding of how the concepts of success and failure are defined, the process of evaluating treatment outcome, and the principles of justifying remedial treatment.

Terminology

Endodontic treatment is used as a generic term to cover the whole spectrum of pulp and periapical therapy. Root canal treatment describes a specific procedure for treating the dental pulp when irreversible damage has occurred, or when vitality is compromised by disease or injury. Although there is a distinction between the

引言

长期以来的观念认为,失败并不像成功那样需要分级评定。这种观念部分是正确的,它强调了定义成功与失败的客观困难性。在寻求处理牙髓治疗失败的方法之前,仔细考虑如何定义失败是十分必要的。

Strindberg 概念

关于成功与失败的传统、标准概念是基于严格标准的,即所谓的“Strindberg 概念”。根据 Strindberg (1956) 的标准,术后惟一令人满意的结果为:经过预定的术后观察时期,患牙无临床症状以及 X 线片显示根尖区正常。简而言之,“成功”的概念就是无任何可视的疾病表征;而“失败”就是出现了任何预示疾病的体征和症状。此概念明确阐述了成功与失败的分界点。

“Strindberg 概念”是主要基于人们对疾病过程的认识而产生的,表达了一个“理想”概念。但是,在临床实

terms, in this book, endodontic treatment and root canal treatment are used interchangeably, as in common usage.

Introduction

It has been said that there is no such thing as failure, just different degrees of success. There is some truth in this statement and it highlights the difficulties of defining success and failure objectively. Therefore, before looking at how to manage endodontic failure, it is pertinent to consider how failure may be defined.

The Strindberg Concept

The traditional, standard notion of success and failure is based on the stringent criteria encapsulated by the so-called “Strindberg Concept”. According to Strindberg (1956) the only satisfactory postoperative outcome, after a predetermined postoperative period, is clinically a symptom-free tooth and radiologically the appearance of a normal periapex. Put simply, “success” is defined as the lack of visible signs of disease while “failure” is defined as the presence of any signs or symptoms indicating disease. Such a concept is very “black and white”, with a definite cut-off point.

The “Strindberg Concept” is based exclusively on our knowledge of the disease process and represents an “ideal” concept

践过程中,也显示出其过于教条、缺乏灵活性的缺点。

牙髓治疗疗效评价方法

理论上 有 3 种方法可用于评价牙髓治疗的效果: 临床检查、影像学检查及组织学检查 (图 1-1)。

临床评价

询问患者是否有症状、患牙的感觉是否正常、行使功能时是否存在不适感。临床检查的体征包括以下内容:

of disease. It can, however, be perceived as being too dogmatic and inflexible for use in everyday clinical practice.

Methods of Evaluating Treatment Outcome

In theory, there are three methods (clinical, radiological and histological) available to evaluate the results of endodontic treatment (Fig 1-1).

Clinical Evaluation

The patient is questioned about any symptoms experienced, whether the tooth feels normal and is comfortable in function. A clinical examination is then carried out to look for signs of disease such as the presence of:

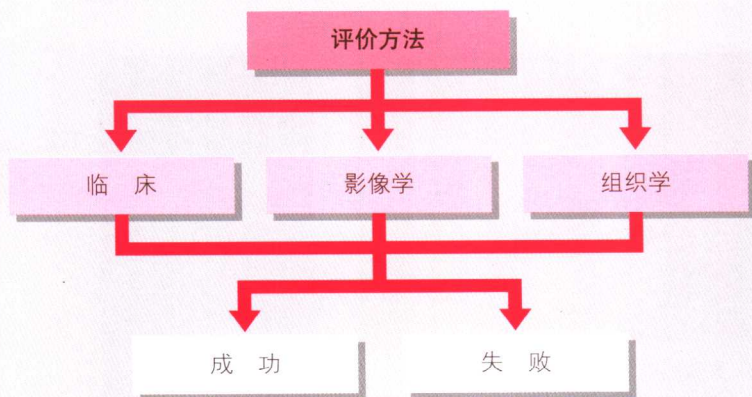


图 1-1 评价治疗疗效的方法

Fig 1-1 Methods of evaluating treatment outcome

- 肿胀
- 窦道 (图 1-2a)
- 触痛

无临床体征和症状则可以认为治疗是成功的。然而, 在临床评价治疗结果的过程中, 存在主观性这个因素。如果临床检查有明显的临床症状而患者并无体征, 这并不意味着患牙无问题且长期没有症状。慢性病损的表现复杂多变, 患者自身不易发现, 直到因为宿主与微生物之间的平衡发生改变, 慢性病损急性发作才引起警觉。这种情况在临床上屡见不鲜。

- a swelling
- a sinus tract (Fig 1-2a) or
- tenderness.

An absence of abnormal clinical signs and symptoms is considered indicative of success. There is an element of subjectivity, however, when assessing treatment outcome clinically. Although there is little question if overt signs or symptoms of disease are present, a patient's lack of symptoms may not necessarily mean that the tooth is disease-free and will remain symptom-free. Chronic lesions may have varying presentations, with the patient being unaware of their presence perhaps until, with little warning, alterations in the host/microbial balance transform the dormant lesion into an acute phase; this is something we have all witnessed often.



图 1-2 失败的征象
注: a. 临床表现颊侧窦道形成; b. X 线片示根尖周透射区
Fig 1-2 Signs of failure. (a) Clinical – a buccal sinus tract. (b) Radiological – a periapical radiolucent area

影像学的评价

使用标准化技术拍摄和处理 X 线片，确保获得高质量、未失真的影像。将 X 线片置于观片灯箱上进行放大观察，最好在光线暗淡的室内进行（图 1-3）。评价标准如下：

- 根管充填的质量：特别观察根管充填的长度和密度
- 牙周的健康状况：包括观察根尖和根侧周牙周韧带间隙的宽度
- 是否存在 X 线透射区和阻射区：若有，观察其所在位置、范围大小以及边缘的情况（图 1-2b）

其实，影像学评价的目的就是要检查任何不同于正常根尖周组织的影像学特征。如果条件允许，可以在治疗前拍摄 X 线片，以便对比研究，随着时

Radiological Evaluation

Radiographs of the tooth are taken and processed using a standardised technique to ensure a good quality, undistorted image. The radiographs are viewed on a light-box, with magnification and ideally with extra-neous light blocked off (Fig 1-3). The following are evaluated:

- quality of the root filling: in particular, its length and density
- periodontal health, including the width of the apical and lateral periodontal ligament space
- presence, location, size and nature of the margin of any radiolucencies (Fig 1-2b) or radiopacities.

In essence, the task is to detect any features that are not consistent with the radiographic characteristics of healthy periapical tissues. If available, previous radio-

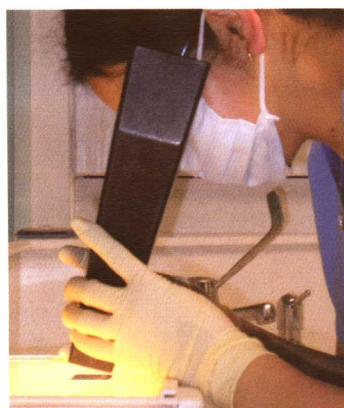


图 1-3 使用影像放大镜在观片灯箱上观察 X 线片

Fig 1-3 Radiographs are viewed on a light-box using a film magnifying cone

间的推移根尖区影像是否有改变(图1-4)。

关于影像学评价治疗结果，存在的主要问题是：

- 并非所有的根尖周病损均可通过影像学检查发现，其检查结果主要取决于病损的大小和位置。另外，影像学上的阳性结果并不一定与实际的病理损害相吻合，需要进一步的确诊。例如，瘢痕性愈合就可能出现这种情况(见第2章)。

graphs should be used for comparison to ascertain any differences in radiographic appearance with time (Fig 1-4).

A major problem with the radiological assessment of treatment outcome is that:

- not all periapical lesions are detectable – detectability is dependent on the size of the lesion and its location. In addition, a positive radiological finding does not always correspond to the existence of a pathological lesion which needs intervention; for example, healing by scar formation may have occurred (see Chapter 2).

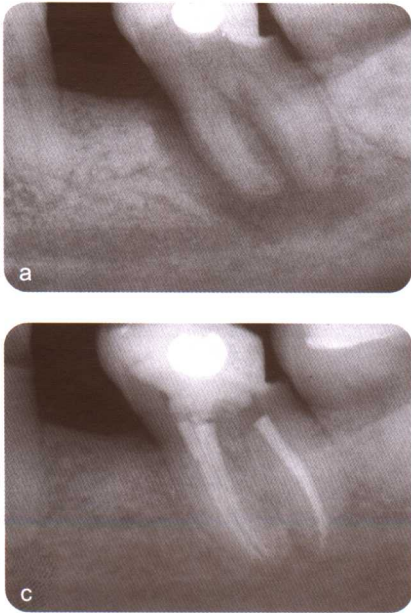


图1-4 治疗前的X线片用于对比评估治疗结果

注：a. 术前X线片；b. 术后X线片；c. 2年后的复诊X线片

Fig 1-4 Previous radiographs should be used for comparison when assessing treatment outcome. (a) Pre-op radiograph. (b) Post-op radiograph. (c) Two-year review radiograph

其他困难包括:

- 需要治疗前的X线片,以便随访的X线片与之前后对照,进行观察。例如,一个较大病损,可能在复诊时其范围大小较早期的影像缩小
- 观察者之间以及观察者自身存在差异,几乎所有的人都相信自己的判断和决定
- 操作者的偏倚:如果评估者本身即为治疗者,那么客观评价是比较困难的,并且,也特别容易得出结论。虽然如此,我们也并不鼓励一定要寻求干预措施

研究发现,操作者在解释X线片时是众说纷纭的。尽管影像学评价治疗结果存在的问题并不能完全消除,但是可以通过以下手段以减少:

- 规范的评分系统:譬如根尖周指数 (PAI) 来评价牙髓治疗效果。PAI系统 (图1-5), 由一组 (5个) 影像学图像组成: 正常根尖周组织 (1分) 及逐渐加重的根尖周炎 (2~5分), 评价病例时可以此作为参考

Other difficulties include:

- the need for baseline information to understand follow-up observations and put them in context; there may be a substantial lesion, but it may be reduced in size compared to earlier images
- the problem of inter and intraobserver differences; we are all biased in our judgements and decision-making
- operator bias; if the assessor was responsible for the treatment, it may be difficult to be objective and decisions are likely to be especially loaded. Equally those seeking to intervene may be too condemning in their desire to get on and treat.

Studies have shown that there is relatively poor agreement amongst operators when interpreting radiographs. Although problems with radiological evaluation of treatment outcome cannot be completely eliminated, they can be reduced by:

- formal scoring systems, such as the Periapical Index (PAI), devised to aid radiological assessment of endodontic treatment outcome. In the PAI system (Fig 1-5) a set of five radiographic images denoting either a healthy periapex (score 1) or an increasing extent or severity of apical periodontitis (scores 2-5) is used as a reference

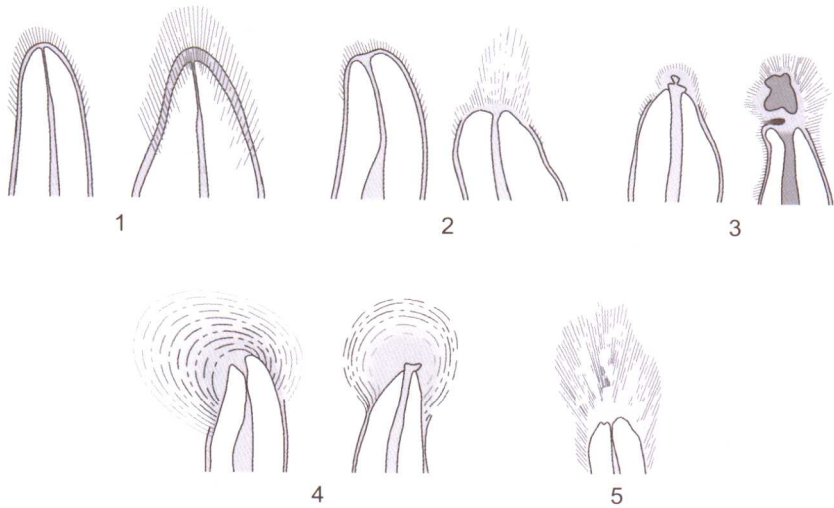


图 1-5 根尖周指数 (PAI), 五个参考图像: 正常根尖周组织 (1 分) 和逐渐加重的根尖周炎 (2 ~ 5 分) (引自 D. Ørstavik)

Fig 1-5 The Periapical Index (PAI), a set of five reference visual images denoting either a healthy periapex (score 1) or an increasing extent or severity of apical periodontitis (scores 2-5). (Courtesy of D. Ørstavik.)

- 统一观察者的评价标准: 通过特殊训练提高观察者的客观性
- 统计学方法: 如 Kappa 检验, 对可能由于随机造成的同一性差异进行统计学分析

虽然配合了标准化的流行病学检查, 上述方法在临床应用中仍具有一定局限性。在临床应用中还是必须推行实用的评价方法, 强调要完全了解临床体征和症状。这并不是为失败病例寻求非严格评价的借口。在评价治

when scoring cases

- formal observer calibration; objective observations may be improved with special training
- statistical methods, such as Kappa statistics, an index which compares the agreement against that which might be expected by chance.

Whilst suited to standardised epidemiological surveys, these methods are of limited value in everyday general practice, where an element of judgement and pragmatism based on full understanding of circumstances must prevail. This is not an

疗效果过程中，影像学检查的监测与治愈的临床体征同样具有重要意义。

组织学评价

为了获得组织学评价，手术获取一块根尖周组织是十分必要的。这块组织经组织学方法处理，并放到显微镜下观察。其目的在于从细胞水平上确定根尖周是否存在感染或其他病变。组织学评价治疗效果主要存在以下两个主要问题：

- 需要获取一块根尖区组织
- 处理组织块的过程中有些因素可能会导致人工假象：细小的组织块可能会被损坏或变形

纯粹论者认为组织学是评价的“金标准”，但是将此法运用于每日临床实践中并不现实。对需要评价预后的所有病例进行活检是没有必要的，也不符合职业道德的要求，同样也是患者难以接受的。

成功率报道存在差异的原因

有关牙髓治疗效果的报道不计其

excuse, however, for uncritical appraisal of failing cases. The monitoring for radiological as well as clinical signs of healing is still important in assessing treatment outcome.

Histological Evaluation

In order to carry out a histological evaluation, surgery is necessary to obtain a block section of the periapex. The block section is processed for histology and examined microscopically. The aim is to determine, at the cellular level, whether there is any evidence of inflammation or other signs of disease at the periapex. The two main problems with the histological assessment of treatment outcome are:

- the need to obtain block sections
- the possibility of artefacts introduced during tissue processing; delicate histological sections may be distorted or damaged.

Purists may consider this method of evaluation the “gold standard”, but it is again not a method that is applicable in everyday clinical practice. To biopsy all cases to evaluate healing is clearly unethical and unnecessary, let alone unacceptable to patients.

Reasons for Reported Variations in Success Rates

There are countless reports on the out-