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AMERICAN ACADEMY OF ORTHOPAEDIC SURGEONS

美国骨科医师学会 肩肘外科学

第3版

Orthopaedic Knowledge Update

Shoulder and Elbow 3

原著 Leesa M. Galatz, MD

主译 崔国庆



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肩肘外科学

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Edited by Leesa M. Galatz

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译者前言

在过去的 20 年中, 肩肘外科在国际上得到了快速的发展, 包括在运动医学、关节镜、创伤和关节置换等多个方面。近年来, 在我国肩肘外科的发展也取得了可喜的进步, 但仍存在很多问题需要解决。国内医生对于肩肘疾病的相关病理解剖学、生物力学、体格检查、影像学检查、手术技术等方面仍存在认识不足的问题, 该方面的知识亟待普及和提高。

《美国骨科医师学会 肩肘外科学》由美国著名的肩肘关节外科专家联合编写。该书内容新颖、全面而深入, 是国际肩肘外科领域最具权威性和先进性的著作之一。这本书以简洁和易读的方式介绍了肩肘外科方面的基础知识和最新进展。我们希望通过翻译将此书展现给国内读者, 能为国内的普通骨科医生、肩关节医生、住院医师以及进修医师提供指导和帮助, 以解决读者在开展肩肘外科工作中所遇到的常见或复杂的问题。

该书由八个部分组成。第一部分介绍与外科医生临床诊疗过程密切相关的肩关节相关基础知识, 包括肩部解剖和功能、肩袖损伤愈合、肩关节不稳基础及肩关节生物力学和生物学等。第二部分和第三部分介绍了肩关节不稳和肩袖损伤的诊断和治疗, 包括病因、病史、体格检查、影像学检查、诊断及治疗原则等。第四部分介绍了肩关节镜技术在肩关节常见疾患中的应用及手术并发症。第五部分介绍了盂肱关节炎的非置换治疗及关节置换技术。关节置换部分包括肩胛盂表面重建、反球置换以及骨折后关节置换的复杂情况等最新知识。第六部分介绍肩关节常见创伤和骨折的手术治疗。第七部分介绍肘关节慢性损伤、肘关节不稳定、肘关节僵硬及肘关节周围骨折等疾病的生物力学研究及诊断和治疗。第八部分介绍肩关节常见的其他论题, 包括成人及小儿的臂丛损伤、肩关节核磁造影、肩关节手术麻醉镇痛、术后康复等肩关节手术相关问题。

本书的译者是一个很强的团队, 他们在本书翻译过程中花费了大量的时间和精力, 在此表示诚挚的感谢。此外, 本书的翻译出版得到了北京大学医学出版社的大力支持和帮助。谨向所有帮助和支持我们工作的同仁表示衷心感谢。限于译者的学术和英文水平, 书中难免有不足之处, 敬请同道海涵并批评指正。

崔国庆

原著前言

肩肘外科领域持续进步和发展。近年来肩关节外科及基础科学的所有方面都取得了很大进步。我们已经难以跟上飞快增长的大量的新信息，就像每年新发表的文章一样，不仅在我们自己的杂志，而且在运动医学、关节镜、创伤和关节置换等领域的杂志。本书以简洁、易读的方式阐述了肩肘外科方面的最新进展，给予骨科医生、肩关节医生、住院医师以及进修医师最新的专业知识。

对以前版本的几个补充和改变反映了这一领域的最新趋势。由于近年来对肩袖肌腱愈合方面的兴趣增加，在基础知识部分增加了关于肩袖的新章节。其他章节也包括了肩关节生物学和生物力学方面的最新进展。在肩关节不稳部分增加了运动员损伤的问题。关于肩袖愈合的生物学改良有一个新章节，以对这一课题进行深度的、无偏见的探讨。本书继续保留关节镜技术作为独立的章节。外科技术已经发生了明显的变化，新的术式不断出现。这一部分提供了更有深度及实用的手术方法。关节置换部分包括了关于肩胛盂表面重建、反球置换以及骨折后关节置换的并发症等最新知识。在过去数年中，这些新进展使肩关节置换发生了革命性的变化。在创伤部分，其强大的国际影响力带给我们一种特别的现代视角，用于审视这些具有挑战性的难题。肘关节部分则包括了在生物力学和治疗选择方面的最新知识。在肩关节其他论题部分，不但进行了更新，并且对许多新的主题进行了重新组合。在这一部分，数个章节的作者提供了多学科视角。

我诚挚感谢本书的各位作者，他们为本书的写作花费了大量的时间和精力。本书的编辑队伍是一个很强的团队，对于他们的合作以及编辑工作表示感谢。此外，还要感谢美国骨科医师学会（AAOS）的出版人员在本书的编辑和出版过程中的工作，尤其要感谢 Deborah Williams, Lisa Moore 和 Marilyn Fox 博士。我非常荣幸地被美国肩肘外科执行委员会（ASES）任命编辑此书，非常感谢 ASES 和 AAOS 给予我这个机会。最后，我要感谢家人在写作过程中给予的耐心、爱和支持。我相信本书将为各个水平的肩肘关节医师、学生提供帮助。

Leesa M. Galatz, MD

致 谢

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第一部分 基础知识

第1章 肩部解剖和功能

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引言

肩关节可以被描述为骨支架的主动和被动稳定装置,这种装置维持着肩关节活动性、稳定性以及同步性的复杂平衡。肩关节外科存在许多未解决的问题,因此有广阔的发展空间。本章介绍了肩部解剖,特别是与肩关节外科医生临床诊疗过程密切相关的最新的研究进展。

骨解剖

肱骨近端

肱骨近端由覆盖以透明关节软骨的椭圆形肱骨头组成。解剖颈以软骨与关节囊和肌腱附着点的移行区域为标志。大、小结节在解剖颈的外侧。小结节为肩胛下肌止点,大结节为冈上肌、冈下肌和小圆肌的止点。大结节还分上、中、下三个关节面^[1]。止于大、小结节的肌腱相互交织围绕于肱骨头周围。大、小结节远端移行到肱骨干的部分为外科颈。肱骨二头肌沟在大、小结节之间起稳定肱二头肌长头腱(long head of the biceps tendon, LHBT)的作用。肱骨近端周围的软组织包括主动和被动稳定装置,它们起着调节肩关节平衡的作用。

肱骨近端结构的形态测量变异很大,主要与人整体的大小有关。有人用计算机三维分析软件测量30对近端肱骨的髓内和髓外形态^[2]:肱骨头后倾角平均 19° ($9^{\circ}\sim 31^{\circ}$);颈干角 41° ($34^{\circ}\sim 47^{\circ}$);肱骨头直径23 mm($17\sim 28$ mm);厚度19 mm($15\sim 24$ mm);中心点向内偏移7 mm($4\sim 12$ mm),向后偏移2 mm($-1\sim 8$ mm)。尽管如此,肱骨头置换术中的个体化解剖重建比这些结果更重要,因为肱骨近端解剖变异很大,人群中获得的数据价值很有限。

重建手术中,正确认识肱骨近端解剖形态很重要。例如,肩关节置换中重建假体的解剖是否正确对关节活动度、动力和撞击均有影响^[3]。大于4 mm

的错位会增加肩峰下的接触,向任何方向偏移8 mm都会影响被动关节活动度。肱骨头置换中肱骨头与肱骨干的偏移小于4 mm能够获得最小的肩峰下接触面积和最大的肩关节活动度^[3]。

二头肌沟经常在手术中被用作肱骨近端的骨性标志^[4,5](图1)。有人在一项对尸体的CT研究中测量了二头肌沟在解剖颈和外科颈处相对肘外侧髁纵轴的距离^[4],他们发现当二头肌沟向远端走行时存在内旋,平均内旋 15.9° ($SD\pm 6.8^{\circ}$;范围: $4^{\circ}\sim 32^{\circ}$)。另有类似的研究发现二头肌沟在解剖颈和外科颈处相差 9.3° (范围: $-3^{\circ}\sim 22.5^{\circ}$)^[5]。肩关节外科医生在关节置换术中以二头肌沟为标志时必须清楚此变异。当对三部分或四部分骨折行肱骨头置换时这也是很重要的影响因素,因为此时近端二头肌沟经常不能被用作可靠的解剖标志。有人推荐将假体外侧部置于解剖颈处二头肌沟后方9 mm或12 mm^[6,7]。用外科颈处的二头肌沟作标志可能导致肱骨头过度后倾。因此,二头肌沟的解剖是肩关节置换个体化解剖重建中的重要参考。

尽管二头肌沟稳定LHBT,但是形成此沟的大、小结节决定了肩袖长度和张力的关系,从而进一步影响肩关节功能。生物力学研究更加强调了恢复大、小结节解剖的重要性。在四部分骨折模型中内向外结节的放置可以改变肩的生物力学并增加肱骨外旋 50° 时的力矩^[8]。这一结果与假体放置时以二头肌沟为标志相关,因为当假体的方向确定后,大、小结节的位置也就固定了。在另一个四部分骨折模型中,结节向下放置10 mm会使肩关节受力明显向上偏移,这提示了外展时力的适应性^[9]。在四部分骨折的肩关节置换中肱骨近端的解剖重建难度很大,以上这些研究为其提供了生物力学的基础。

肩胛盂

肩胛盂在盂肱关节中起球窝的作用。它附着于肩胛骨体部的外侧,呈梨形,下部分更宽大。肩胛盂的平均上下径为39 mm(± 3.7 mm;范围:30~