

·述评·

## 儿童发育性髋关节发育不良的治疗： 闭合复位还是开放复位？



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发育性髋关节发育不良 (developmental dysplasia of the hip, DDH) 或先天性髋关节脱位 (congenital Dislocation of the hip, CDH) 是常见的儿童下肢畸形, 表现为股骨头和髋臼之间位置关系的异常, 包括髋臼发育不良、髋关节半脱位和全脱位, 其发病率为 1‰~34‰<sup>[1,2]</sup>。

DDH 最早由希波克拉底 (公元前 460 年—公元前 370 年) 报道。然而, 直到 19 世纪 Pravaz、Paci 和 Lorenz 等才真正开始 DDH 的治疗<sup>[3]</sup>。Lorenz 最先在 DDH 治疗中取得重大突破, 自他之后 DDH 闭合复位后再脱位发生率才显著下降 (之前再脱位发生率高达 95%), 因此 Lorenz 被认为是“髋关节脱位之父”<sup>[3]</sup>。1905—1935 年, 开放复位在英格兰和美国逐渐开始流行, 并出现各种形式的截骨矫形术, 如 Salter 截骨术<sup>[4]</sup>、Pemberton 截骨术<sup>[5]</sup>、Dega 截骨术<sup>[6]</sup>、三联截骨术<sup>[7,8]</sup>等。1978 年, Graf<sup>[9]</sup>开始利用超声来诊断 DDH, 并由此开启了 DDH 早期诊断和治疗的新时期。

回顾 DDH 治疗的 100 余年历史, 越来越多的 DDH 患儿获得早期诊断和治疗。目前欧美发达国家均已开展 DDH 的早期筛查并取得了巨大成就, 使得晚发性 DDH 的发生率显著下降<sup>[10,11]</sup>。对于 6 个月以上大龄 DDH 的治疗, 国内外普遍观点认为, 6 个月至行走期 (12~18 个月) 的婴幼儿, 宜采用闭合复位石膏固定; 而对于行走期以后的患者, 则建议行开放复位, 部分患者还需行骨盆或股骨截骨矫形术<sup>[3,12]</sup>。然而, 在 DDH 的临床实践中, 不同国家、地区以及不同医生之间存在很大差异。

目前的趋势是越来越多的医生采用开放复位治疗晚发性 DDH, 而且开放复位的年龄也有不断降低的趋势。在一项北美儿童骨科协会 (Pediatric Orthopaedic Society of North America, POSNA) 的调查中, 32% 和 16% 的 POSNA 成员把开放复位的最低年龄分别定为 6 个月和 12 个月<sup>[13]</sup>。Farsetti 等<sup>[14]</sup>报道开放复位治疗的 52 例 (71 髋) DDH 患儿中, 平均年龄只有 16 个月 (3~36 个月)。在 Ning 等<sup>[15]</sup>报道 652 例 (864 髋) DDH 患儿中, 所有患儿采用开放复位、骨盆截骨、股骨短缩截骨术, 其中 183 例 (206 髋) 患儿年龄为 1.5~2.5 岁。Castaneda 等<sup>[16]</sup>和 Alexiev 等<sup>[17]</sup>也报道了类似的结果。

造成越来越多的医生选择开放复位的原因是他们相信开放复位后能够提高疗效, 减少股骨头缺血坏死 (avascular necrosis of proximal femoral epiphysis, AVN) 的发生。然而, 开放复位治疗 DDH 是否能够显著提高疗效还有待进一步明确。特别是对于 2 岁左右的 DDH 患儿, 常规行开放复位、骨盆截骨加股骨短缩截骨术, 这对于所有患儿都合适吗<sup>[15]</sup>? 笔者认为答案是否定的。从既往文献来看, 采用开放复位治疗 DDH 的影像学结果 (Severin I/II) 与采用闭合复位相比并无显著差异 (表 1 和表 2)<sup>[14-33]</sup>。特别是一些长期随访研究显示, 开放复位治疗 DDH 并不能获得更好的疗效。Gibson 等<sup>[19]</sup>报道了采用开放复位治疗的 121 例 (147 髋) DDH 患儿, 手术年龄 12~36 个月, 末次随访时年龄为 16~31 岁, 结果显示 59% 的患儿能够获得满意的影像学结果。而 Terjesen 等<sup>[34]</sup>回顾性分析了 60 例 (74 髋) 采用闭合复位治疗的 DDH 患儿, 平均年龄 19.6 个月 (8~37 个月), 平均随访 58 年 (55~60 年), 结果显示 53% 的髋关节能够获得满意的疗效。由此可见, 从远期疗效来看, 开放复位治疗 DDH 并不能显著提高临床疗效。

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表 1 既往文献报道的 DDH 开放复位后影像学检查结果满意率(Severin I / II)

Table 1 Satisfactory rate (Severin I / II) of open reduction for DDH in previous studies

作者	时间(年)	期刊	Severin I / II (%)
Castañeda P <sup>[16]</sup>	2018	J Child Orthop	80.0 (570/712)
Pollet V <sup>[24]</sup>	2018	Bone Joint J	77.6 (45/58)
Ozkut AT <sup>[23]</sup>	2018	Acta Orthop Traumatol Turc	90.0 (56/62)
Alexiev V <sup>[17]</sup>	2017	Acta Chir Orthop Traumatol Cech	84.0 (162/193)
Farsetti P <sup>[14]</sup>	2015	Clin Orthop Relat Res	93.0 (66/71)
Yamada K <sup>[18]</sup>	2014	Bone Joint Res	60.0 (69/115)
Ning B <sup>[15]</sup>	2014	BMC Musculoskelet Disord	84.7 (732/864)
Ahmed E <sup>[22]</sup>	2013	Acta Ortop Bras	77.0 (20/26)
Wang TM <sup>[21]</sup>	2013	J Bone Joint Surg Am	84.9 (180/212)
Bhuyan BK <sup>[20]</sup>	2012	Indian J Orthop	83.3 (25/30)
Gibson PH <sup>[19]</sup>	1982	J Bone Joint Surg Br	59.0 (87/147)

表 2 既往文献报道的 DDH 闭合复位后影像学检查结果满意率(Severin I / II)

Table 2 Satisfactory rate (Severin I / II) of closed reduction for DDH in previous studies

作者	时间(年)	期刊	Severin's grade I / II (%)
Göğüş MT <sup>[25]</sup>	1997	Turk J Pediatr	81.1 (60/74)
Aksoy MC <sup>[26]</sup>	2002	Turk J Pediatr	76.0 (152/200)
Kitoh H <sup>[27]</sup>	2006	J Orthop Sci	62.0 (28/45)
Sibiński M <sup>[28]</sup>	2006	Int Orthop	81.3 (126/155)
Terjesen T <sup>[29]</sup>	2007	Acta Orthop	81.0 (63/78)
Rampal V <sup>[30]</sup>	2008	J Bone Joint Surg Br	93.6 (44/47)
Kaneko H <sup>[31]</sup>	2013	J Pediatr Orthop	82.7
Shin CH <sup>[32]</sup>	2016	J Bone Joint Surg Am	79.8 (67/84)
Cai Z <sup>[33]</sup>	2017	J Int Med Res	78.5 (266/339)
Terjesen T <sup>[34]</sup>	2018	J Child Orthop	53.0 (39/73)

同样,开放复位也不能降低 AVN 的发生率,相反会增加 AVN 的风险。目前,已经有大量研究显示开放复位是 AVN 的危险因素<sup>[35-37]</sup>。特别是在 Wang 等<sup>[38]</sup>的 Meta 分析中,他们纳入了 9 个对比研究,比较闭合复位和开放复位的 AVN 发生率,结果显示,开放复位的患儿 AVN 发生率显著高于闭合复位。此外,开放复位的 DDH 患儿除了 AVN 发生率明显升高外,还存在感染、关节僵硬等影响 DDH 疗效的并发症<sup>[35,36]</sup>。

造成 DDH 治疗过程在不同国家、地区以及不同医生间存在很大差异的另一个重要原因是目前缺乏基于循证医学证据的、切实可行的诊疗指南。虽然国内外有一些治疗指南和诊疗规范,但这些治疗指南的制定多基于个别专家(组)的讨论意见,缺乏循证医学证据<sup>[39,40]</sup>。多数指南为通过查阅文献、专家问卷调查等方式形成的专家共识,在指导临床过程中具有一定的意义。然而,众所周知,专家意见在循证医学证据等级中处于最低一级,其获得结论的可靠性远远比不上高质量的临床随机对照试验。例如,有些指南中提到的 18~24 月龄的 DDH 患儿推荐采用一期切开复位同时行股骨截骨、骨盆截骨矫形术。然而,目前国内外的儿童骨科教程中多推荐首选闭合复位或单纯切开复位<sup>[3,12,41]</sup>。此外,行开放复位时,是否需要行股骨截骨仍存在很大争议<sup>[42]</sup>。正因如此,导致这些指南在实际应用中存在诸多疑问。

目前,对于 18~24 月龄以上(行走年龄)的 DDH 患儿选择开放复位已经被广泛接受。然而,迄今为止,针对这一主流观点的理论依据依然十分缺乏。最先提出 18 月龄以后常规行开放复位加髋臼成形术的是 Salter<sup>[4,43]</sup>。他认为患儿在 1 岁以后内收长肌和髂腰肌会出现挛缩,从而阻挡股骨头的复位。随着年龄的继续增长,即使髋关节能够获得同心圆复位,也可能最终残留髋臼发育不良。因此,他推荐 18 月龄以后的 DDH 行开放复位的同时常规行骨盆截骨术(Salter 截骨)。此后,这一观点被写入大多数教科书,并被广泛接受。然而,在临床实践中,该观点还存在诸多疑问。首先,每个患儿的病理改变不同,其复位的难易程度各

异,不应该完全根据年龄来决定选择闭合复位或开放复位。其次,对于18月龄以上的DDH患儿,虽然采用开放复位和骨盆截骨矫形术可能降低残留髋臼发育不良的发生率,但诸多研究表明开放复位会显著增加AVN的发生率,这反过来又可能导致严重的不良后果<sup>[35-37]</sup>。再次,残留髋臼发育不良是DDH闭合复位后常见的现象(发生率约30%),但是残留髋臼发育不良并不意味着治疗的失败。诸多研究(包括笔者)已经证实二期关节囊外的骨盆截骨矫形术(如Salter、Pemberton截骨)通常能够获得很好的疗效<sup>[44-46]</sup>。因此,即便是18月龄以上的DDH患儿闭合复位以后出现残留髋臼发育不良,只要接受二期截骨矫形,同样能获得满意的疗效。

笔者认为,虽然年龄是影响DDH预后的重要因素(年龄越大,DDH的疗效越差),但是不能把年龄>18个月作为开放复位的依据。大龄DDH疗效变差的原因应当归咎于其病理改变本身,而不是治疗方式。所以,我们应当根据DDH患儿髋关节的病理改变来选择个体化治疗方案,而不是仅仅根据患儿的年龄决定行闭合或开放复位。此外,在DDH治疗时,尽可能选择保守的治疗策略,避免打开关节囊,以减轻创伤,并避免对髋关节发育的干扰,减少AVN的发生。实际上,绝大多数DDH选择闭合复位都是可以成功的,即便在复位初期达不到同心圆复位,经过6个月的康复多数可以达到同心圆复位<sup>[47]</sup>。尽管DDH采用闭合复位后可能会残留髋臼发育不良,但可以通过二期囊外的骨盆截骨矫形术获得纠正。

目前,在治疗DDH时,如何选择复位方式(闭合复位或开放复位)仍然是今后一段时期内争论的焦点。因此,这需要我们儿童骨科医生积极开展临床研究去进行深入细致的探讨。当前,我国儿童骨科医生应当引领全世界DDH的研究。一方面我国人口基数大,DDH病例数远大于世界其它各国。另一方面,我国儿童骨科同行已经开展了深入的多中心研究与协作<sup>[44]</sup>。通过多中心研究与协作,我们可以设计出更科学、更严谨的研究方案,得出的结论也将更加可靠,更加具有指导意义。

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## 关于本刊 2018 年广告的声明

本刊于 2018 年 1 月至 8 月连续刊登在封三的广告“智能气压式脊柱侧弯矫形器”, 广告提供方为长沙福尔泰矫形康复器材有限公司, 由于该公司工作失误, 错将湖南秩疆医疗科技有限公司署名为该产品的研发机构。此矫形器实为重庆医科大学附属儿童医院骨科主任南国新教授研发, 并获国家专利, 专利号 CN201710949101.7。特此声明, 并停止该广告再刊登。