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颈前路“杂交式”与颈后路治疗多节段脊髓型颈椎病的临床比较*

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摘要 目的:比较颈前路“杂交式”减压融合与颈后路全椎板减压侧块内固定术治疗多节段脊髓型颈椎病的临床特点。**方法:**选择36例行“杂交式”颈前路治疗及33例行颈后路全椎板减压侧块内固定术治疗的多节段脊髓型颈椎病患者,观察两组患者手术前后一般资料、出血量、手术时间、颈椎生理曲度、JOA评分及并发症的发生情况。**结果:**两组患者术前的一般资料包括年龄(颈前路组:56.23±7.64岁,颈后路组:55.76±8.18岁)、性别(颈前路组:22男/14女,颈后路组:20男/13女)、颈椎生理曲度D值(颈前路组:7.41±3.14,颈后路组:8.19±2.74)、JOA评分(颈前路组:9.08±1.09分,颈后路组:8.82±1.26分)、病程(颈前路组:17.24±7.36月,颈后路组:15.75±5.78月)和受累节段(颈前路组:3.11±0.26个,颈后路组:3.24±0.39个)比较差异均无统计学意义($P>0.05$)。与颈后路相比,颈前路的术中出血量(颈前路组:221.79±178.02 mL,颈后路组:483.07±434.25 mL)更少,差异有统计学意义($P<0.05$),手术时间(颈前路组:196.54±51.88 min,颈后路组:175.12±54.93 min)更长,但差异无统计学意义($P>0.05$)。随着时间的延长,颈前路组患者颈椎生理曲度和JOA评分逐渐增大,而颈后路组患者椎生理曲度减少,JOA评分逐渐增大,差异有统计学意义($P<0.05$)。颈前路组出现植骨未融合、声音嘶哑和脑脊漏液,颈后路组发生轴性疼痛和C5神经根麻痹,但两组患者并发症的发生率比较差异无统计学意义(颈前路组:13.89%,颈后路组:12.12%)($P>0.05$)。**结论:**颈前路“杂交式”减压融合与颈后路全椎板减压侧块内固定术在治疗多节段脊髓型颈椎病上各有优点,临床根据患者的情况而采取合适的治疗方式。

关键词:颈前路“杂交式”减压融合;颈后路全椎板减压侧块内固定术;多阶段脊髓型颈椎病

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Comparison of the Therapeutic Characteristics of Anterior Hybrid Decompression and Posterior Decompression in the treatment of Multilevel Cervical Spondylotic Myelopathy*

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ABSTRACT Objective: To compare the therapeutic characteristics of anterior hybrid decompression and posterior cervical posterior laminectomy in the treatment of multilevel cervical spondylotic myelopathy. **Methods:** Thirty six cases of multilevel cervical spondylotic myelopathy patients treated by anterior hybrid decompression and thirty three cases of multilevel cervical spondylotic myelopathy patients treated by posterior cervical posterior laminectomy were involved. The general information, bleeding amount, operative time, cervical curvature D value, JOA score and incidence of postoperative complications of the two groups before and after surgery were compared. **Results:** There was no significant difference in the general information among the two groups($P>0.05$), including age (anterior group: 56.23±7.64 years old, posterior group: 55.76±8.18 years old), sex (anterior group: 22 males/14 females, posterior group: 20 males/13 females), cervical curvature D value (anterior group: 7.41±3.14, posterior group: 8.19±2.74), JOA score (anterior group:

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9.08±1.09 scores, posterior group: 8.82±1.26 scores), disease course (anterior group: 17.24±7.36 months, posterior group: 15.75±5.78 months) and affected segment (anterior group: 3.11±0.26 segments, posterior group: 3.24±0.39 segments). The amount of bleeding in the anterior group (anterior approach: 221.79±178.02 ml, posterior group: 483.07±434.25 ml) was lower than that of the posterior group ($P<0.05$). The operative time (anterior group: 196.54±51.88 mins, posterior group: 175.12±54.93 mins) was longer, but there was no significant difference ($P>0.05$). The cervical curvature D value and JOA score of posterior group were increased with the extension of surgery time. However, the cervical curvature D value of posterior group was decreased, but JOA score was increased. The incidence of bone unfinished, hoarseness and cerebrospinal fluid leakage were found in the anterior group, and axial pain and C5 nerve root paralysis were found in the posterior group. But there was no significant difference in the incidence of complications between the two groups (anterior group 14.89%, posterior group: 12.12%) ($P>0.05$). **Conclusions:** Anterior hybrid decompression and posterior cervical posterior laminectomy had their own advantages in the treatment of multilevel cervical spondylotic myelopathy. The appropriate treatment should be taken according to the condition of patients.

Key words: Anterior hybrid decompression; Posterior cervical posterior laminectomy; Multilevel cervical spondylotic myelopathy

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前言

脊髓型颈椎病是发生在中老年人群的一种常见疾病,严重时可导致运动功能与神经功能障碍,进而影响患者的生活质量,因此早发现早治疗至关重要。目前,多节段脊髓型颈椎病的治疗主要以手术为主,其中颈后路全椎板减压侧块内固定术因手术风险低、技术简便而一直被广泛应用^[1],而近年来发现颈前路"杂交式"可直接切除压迫脊髓退变的椎间盘及增生的骨赘,恢复生理曲度,尽可能维持颈椎正常结构^[2],治疗效果显著,临床上也越来越受到人们的重视。但关于使用哪种手术方式一直备受争议,而每个患者的患病情况与经济情况各有不同,分析出不同手术方法的特点优势,对患者手术方式的选择很重要。本研究通过对比两种手术方式临床特点,旨在为临床上患者的治疗提供有效依据,进而指导临床治疗。

1 资料与方法

1.1 研究对象

收集本院 2014 年 12 月至 2016 年 6 月 36 例行颈前路"杂交式"治疗及 33 例行颈后路治疗的多节段脊髓型颈椎病患者的临床资料。颈前路组男性患者 22 例,女性患者 14 例;年龄 56.23±7.64 岁;病程 17.24±7.36 月;颈后路组男性患者 20 例,女性患者 13 例;年龄 55.76±8.18 岁;病程 15.75±5.78 月。所有患者术前影像学显示多节段颈椎间盘突出,并有如下症状:颈部疼痛,胸腹部束带感,双脚有踩棉花样感,双下肢运动障碍, Hoffmann 征阳性。纳入标准:符合多节段颈椎病的诊断标准, MRI 或 CT 证实存在椎间盘突出、颈椎不稳且保守治疗无效者。排除标准:存在手术禁忌症。本研究获得院伦理委员会批准和患者的知情同意。

1.2 手术方式与评价

颈前路"杂交式"组自颈前斜切开皮肤,经肩胛舌骨肌与胸锁乳突肌间隙逐层暴露至椎体前方, C 臂机定位脊髓受压严重椎间隙, 切开纤维环, 摘除髓核, 撑开器撑开椎间隙, 刮匙处理终板至出血, 尖嘴咬骨钳和枪钳咬除椎体、增生骨赘及后纵韧带, 卡尺测量所需长度的钛网, 用修剪好的颗粒骨填充, 适当牵引颈椎置入钛网。较轻节段行椎间隙减压; 彻底清除椎间盘、后纵韧带及增生骨赘, 将合适融合器置入椎间隙。量取合适长

度的钛板, 置入至椎体。C 臂机透视植入物情况, 冲洗并放置引流片, 逐层缝合。图 1。

颈后路组取颈后正中为切口, 暴露竖脊肌两侧椎板, 颈后路组取颈后正中为切口, 暴露竖脊肌两侧椎板, 对相应部位进行减压, 采用 Magerl 法进钉, 螺钉钻开双皮质, 选择合适的弯棒进行内固定。磨钻打磨小关节, 将得到的骨屑作植骨融合。用磨钻切除全椎板及神经根管减压, 冲洗、负压引流, 逐层缝合。术前服用抗生素, 避免手术感染, 术后使用激素、甘露醇及营养神经药物, 5 天左右后停用, 拔除引流后佩戴颈托进行四肢功能锻炼, 术后需佩戴颈托。图 2。

术前服用抗生素, 避免手术感染, 术后使用激素、甘露醇及营养神经药物, 5 天左右后停用, 拔除引流后佩戴颈托进行四肢功能锻炼, 术后需佩戴颈托。图 2。

采用 Bobor^[3]氏法测量标准, 检测患者术前、术后 3 天、术后 6 月及术后 12 月的颈椎生理曲度; 采用 JOA^[4]评分标准, 对术前、术后 3 天、术后 6 月及术后 12 月的神经功能进行评分。 Hirabayashi^[5]法计算功能改善率, $\geq 75\%$ 为 "优"; $50\% \sim 74\%$ 为 "良"; $25\% \sim 49\%$ 为 "中"; $\leq 24\%$ 为 "差"。

1.3 统计学分析

采用 SPSS19.0 统计软件进行统计学分析, 两组计量资料的比较采用 t 检验, 不同时间点计量资料的比较采用单因素方差分析, 进一步两个时间点间比较采用 SNK-q 检验, 两组计数资料的比较采用 χ^2 检验, 以 $P<0.05$ 认为差异有统计学意义。

2 结果

2.1 两组患者一般资料的比较

两组患者术前的一般资料包括年龄、性别、颈椎生理曲度 D 值、JOA 评分、病程和受累节段比较差异均无统计学意义 ($P>0.05$), 见表 1。

2.2 两组患者术中资料的比较

与颈后路组比较, 颈前路组的出血量显著增加, 手术时间明显缩短, 差异有统计学意义 ($P<0.05$), 见表 2。

2.3 两组患者术后效果的比较

两组术前及术后 3 天、6 月、12 月的颈椎生理曲度 D 值在不同时间之间比较差异有统计学意义 ($F_{\text{组内}}=7.851, P_{\text{组内}}<0.05$); 而且两组患者颈椎生理曲度 D 值均是在术前最低, 然后逐

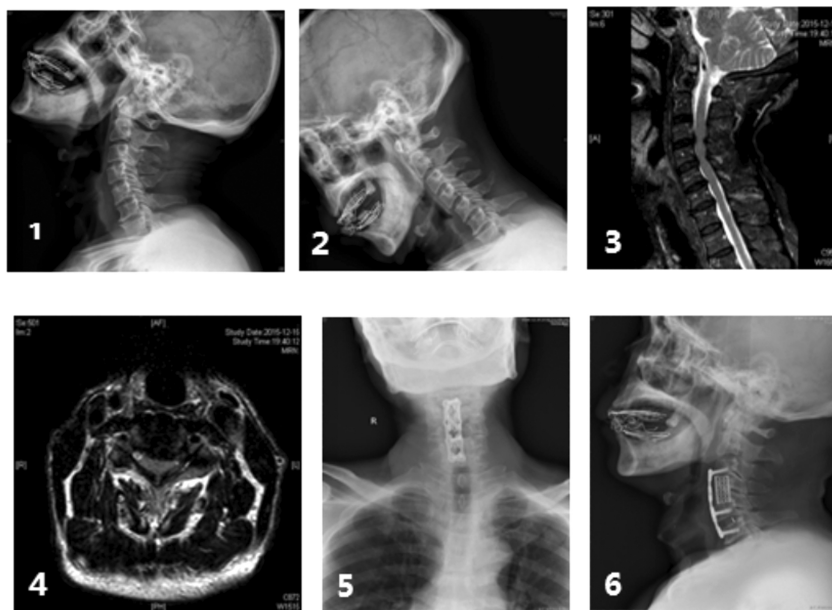


图 1 颈前路组手术情况

Fig.1 Operation situations of anterior group

注:1、2 示术前 X 线正侧位片示 C4/5、C5/6、C6/7 椎体前、后缘骨赘形成,椎间隙高度下降;3、4 示术前 MRI 显示 C3/4、C4/5、C5/6 椎间盘突出、脊髓受压,其中 C3/4 节段较重;5、6 示行 C4 椎体次全切除 +C5/6 椎间隙减压术后 1 周颈椎正侧位 X 线片示内置物位置良好。

Note: 1 and 2 showed the preoperative X-ray radiographs showed C4/5, C5/6, C6/7 anterior and posterior vertebral osteophyte formation, intervertebral height decreased; 3 and 4 showed the preoperative MRI showed that C3/4, C4/5, C5/6 disc herniation, spinal cord compression, the C3/4 segment was heavier; 5 and 6 showed the row C4 corpectomy decompression of +C5/6 intervertebral space after 1 weeks of cervical anteroposterior and lateral X-ray films showed good position of implants.

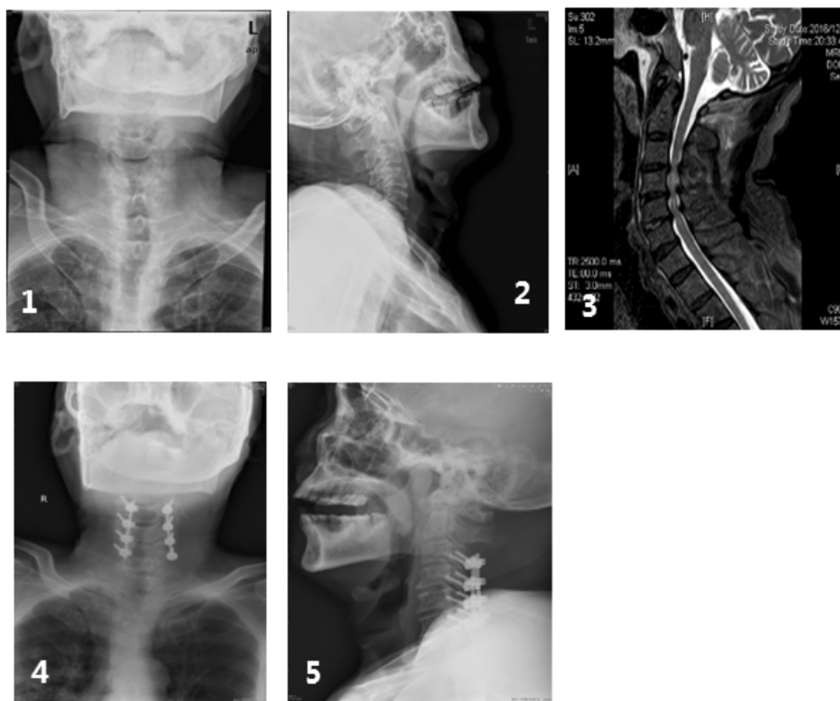


图 2 颈前路组手术情况

Fig.2 Operation situations of posterior group

注:1、2 示术前 X 线正侧位片示椎间隙狭窄、椎体前、后缘骨赘形成;3 示术前 MRI 显示 C3/4、C4/5、C5/6 椎间盘突出、黄韧带肥厚,脊髓前后方均受压严重;4、5 示行颈椎后路全椎板减压侧块螺钉内固定术后 1 周颈椎正侧位 X 线片示内置物位置良好。

Note: 1 and 2 showed vertebral stenosis, anterior and posterior vertebral osteophyte formation; 3 showed the preoperative MRI that C3/4, C4/5, C5/6 disc herniation, yellow ligament hypertrophy, spinal cord before and after the party seriously pressed; 4 and 5 showed the cervical posterior laminectomy and lateral mass screw 1 weeks after internal fixation of cervical spine lateral radiographs showing the location of implants was good.

表 1 两组患者术前的一般资料比较

Table 1 Comparison of the general information between the two groups before surgery

Groups	Age(years old)	Sex(males / females)	Cervical curvature D value	JOA score(scores)	Disease course (months)	Affected segment (segments)
Anterior group (n=36)	56.23± 7.64	22/14	7.41± 3.14	9.08± 1.09	17.24± 7.36	3.11± 0.26
Posterior group (n=33)	55.76± 8.18	20/13	8.19± 2.74	8.82± 1.26	15.75± 5.78	3.24± 0.39
P	0.806	0.966	0.277	0.362	0.356	0.105

表 2 两组患者术中资料的比较

Table 2 Comparison of the intraoperative data between the two groups

Groups	Anterior group(n=36)	Posterior group(n=33)	T	P
Operative time(min)	196.54± 51.88	175.12± 54.93	1.666	0.100
Amount of bleeding(mL)	221.79 ± 178.02	483.07± 434.25	-3.320	0.001

渐升高,在术后 12 月达到高峰。颈前路组的颈椎生理曲度明显高于颈后路组($F_{\text{组间}}=7.243$, $P_{\text{组间}}>0.05$);不同时间点与分组之间存在交互作用($F_{\text{交互}}=6.922$, $P_{\text{交互}}<0.05$);颈椎生理曲度最大值出现在颈前路组术后 12 月,最小值出现在颈后路组术后 12 月,差异均有统计学意义($P<0.05$),详见表 3。

两组术前及术后 3 天、6 月、12 月的 JOA 评分在不同时间之间有显著差异($F_{\text{组内}}=8.426$, $P_{\text{组内}}<0.05$);而且两组患者 JOA

评分均是在术前最低,然后逐渐升高,在术后 12 月达到高峰;颈前路组的 JOA 评分高于颈后路组,但差异无统计学意义($F_{\text{组间}}=1.273$, $P_{\text{组间}}>0.05$);不同时间点与分组之间不存在交互作用($F_{\text{交互}}=1.341$, $P_{\text{交互}}>0.05$);JOA 评分最大值出现在颈前路组术后 12 月,最小值出现在颈后路组术前,均有统计学差异($P<0.05$),详见表 4。

表 3 两组患者术前、术后颈椎生理曲度 D 值比较

Table 3 Comparison of the cervical curvature D value between the two groups before and after operation

Groups	Different time points			
	Before surgery	At 3 days after surgery	At 6 months after surgery	At 12 months after surgery
Anterior group	7.41± 3.14	9.16± 3.34	9.54± 2.45	9.98± 2.42
Posterior group	8.19± 3.74	7.63± 2.81	7.24± 2.56	6.45± 2.23

Note: $F_{\text{within groups}}=8.426$, $P_{\text{within groups}}<0.05$; $F_{\text{between groups}}=1.273$, $P_{\text{between groups}}>0.05$; $F_{\text{interactive}}=1.341$, $P_{\text{interactive}}>0.05$.

表 4 两组患者术前、术后 JOA 评分比较

Table 4 Comparison of the JOA value between the two groups before and after operation

Groups	Different time points			
	Before surgery	3 days after surgery	6 months after surgery	12 months after surgery
Anterior group	9.08± 1.09	13.21± 1.37	13.78± 1.54	14.04± 1.86
Posterior group	8.82± 1.26	12.54± 1.41	13.13± 1.66	13.75± 1.12

Note: $F_{\text{within groups}}=8.426$, $P_{\text{within groups}}<0.05$; $F_{\text{between groups}}=1.273$, $P_{\text{between groups}}>0.05$; $F_{\text{interactive}}=1.341$, $P_{\text{interactive}}>0.05$.

2.4 两组患者术后脊髓改善情况的比较

术后,颈前路组优良率明显高于颈后路组,但差异无统计学意义($P>0.05$),如表 5。

2.5 两组患者术后并发症发生情况的比较

两组患者术后并发症包括植骨未融合、声音嘶哑、脑脊液、轴性疼痛和 C5 神经根麻痹,结果显示颈前路组出现植骨未

表 5 两组患者术后脊髓优良率比较

Table 5 Comparison of the excellent rate of spinal cord between the two groups after operation

Groups	Excellent	Good	Moderate	Poor	Excellent rate	P
Anterior group(n=36)	10	12	9	5	61.11%	0.765
Posterior group(n=33)	8	11	10	4	57.58%	

融合、声音嘶哑和脑脊液漏共 5 例;颈后路组发生轴性疼痛和 C5 神经根麻痹共 4 例,但两组术后并发症的发生率比较差异无统计学意义($P>0.05$)。

3 讨论

多节段脊髓型颈椎病是三个或更多节段连续或不连续椎间盘的退行性改变而引起脊髓功能障碍的颈椎病^[6],其严重时可造成肢体残疾,近年来的发病率呈逐年升高。颈前路和颈后路手术都是临床上常用的治疗多节段脊髓型颈椎病的方法^[7],但选取哪种方法一直存在争议。颈后路全椎板减压侧块内固定术一直是临床上多节段脊髓型颈椎病的有效手术方法^[8]。近年来,颈前路"杂交式"减压融合因结合前路椎间盘切除与前路椎体切除,对颈椎不同节段给予合理治疗,也被应用到多节段脊髓型颈椎病的治疗中,但有关颈前路"杂交式"与颈后路手术临床特点差异的研究还很少。

本研究对比颈前路"杂交式"组与颈后路组的术中出血量及手术所用时间,结果显示颈前路"杂交式"组患者术中手术时间长于颈后路组,但出血量却较颈后路组少,表明临床在颈前路手术前应做好麻醉等准备,避免时间过长,在颈后路手术前做好血量过多的应对处理,避免因出血过大而影响手术效果。这可能是颈前路"杂交式"根据不同节段脊髓受压情况进行减压固定,手术操作更复杂,因此手术时间更长。而颈后路由于手术切开的范围大且深,引起颈椎内静脉扩张,造成出血量较颈前路组更多。李亮等研究 72 例多节段脊髓型颈椎病患者颈椎前路减压治疗的比较,结果发现前路组手术时间比后路组长,出血量比后路组少^[9],这与本研究的结果近似一致。

本研究分别对比了颈前路"杂交式"组与颈后路组术前、术后不同时间点颈椎生理曲度 D 值与 JOA 评分的变化情况,发现随着时间的延长,颈前路组患者的颈椎生理曲度 D 值逐渐增大,JOA 评分也增大,而颈后路组患者的颈椎生理曲度 D 值随着时间的增加而减小,但 JOA 评分增大。其可能的原因是颈前路手术通过减压、固定植骨可恢复颈椎生理曲度,而后路手术打破椎体的连续性,破坏了颈椎的均衡受力,因此颈椎生理曲度变小^[10]。两组的 JOA 评分均增加,表明两组手术方法均可显著改善患者脊髓神经功能。潘德馨等探究 20 例颈前路治疗多节段脊髓型颈椎病患者与 15 例颈后路治疗患者的近期临床疗效,发现颈前路组患者 JOA 评分改善率为 70%,颈后路组改善率为 60%,两组患者神经功能均改善^[11],这与本研究结果相近。两组患者脊髓优良率比较无统计学差异,表明颈前路"杂交式"与颈后路治疗多节段脊髓型颈椎病都能改善患者的脊髓功能。

本研究中,颈前路"杂交式"组患者并发植骨未融合、声音嘶哑和脑脊液漏症状,颈后路组患者并发 C5 神经根麻痹和轴性疼痛症状。这可能是颈前路手术时去除颈椎椎体的多个节段,而固定的钛网,需跨越较长的节段而受到较大的应力,因此会引起钛网松动^[12],而且去除多个椎间盘可造成大量血运破坏,易导致植骨不融合的发生。颈前路手术时直接损伤、术中过度牵拉组织及术后发生局部血肿,都可导致患者术后声音嘶哑^[13];患者手术去除后韧带骨化物时,因与硬脊膜粘连,易引起硬脊膜撕裂损伤,而导致患者脑脊液漏^[14]。颈后路手术时,由于神

经根孔变小,开门角度过大等原因,可导致神经根麻痹的发生;手术因去除肌肉过多,造成颈椎稳定性被破坏,因此术后常引起轴性疼痛的发生^[15]。李文峰等研究多节段脊髓型颈椎病发现 22 例颈前路组患者出现 2 例术后声音嘶哑症状,14 例颈后路组患者有 3 例出现轴性症状^[15],这与本研究结果相近。

在治疗多节段脊髓型颈椎病上,颈前路"杂交式"术中出血量更少,术后颈椎生理曲度更大,并发症更多但并不是很严重;而颈后路手术时间更长,术后并发症更少却更严重,但两种手术术后的 JOA 评分均较术前增大。这表明两种手术方式均提高了患者的神经功能。但本研究仍存在一些不足之处,如样本数相对偏少,需进一步收集更多病例继续探究,随访时间也较短,需在进一步的研究中延长随访时间而观察手术的长远疗效。

综上所述,颈前路"杂交式"减压融合与颈后路全椎板减压侧块内固定术在治疗多节段脊髓型颈椎病上存在异同,颈前路"杂交式"能尽可能的保护颈椎结构,改善颈椎生理曲度;而颈后路可扩大椎管,去除脊髓的压迫,发挥间接作用,两种手术方法各有各的特点,因此指导临床上根据患者的病情进行适当手术方式的选择。

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