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·述评·

近端胃癌手术切除与重建方式的发展现状

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摘　要　胃癌是常见的恶性肿瘤，近年来近端胃癌和食管胃结合部腺癌发生率明显增加。多项研究表明，对于近端胃癌或食管胃结合部腺癌，当肿瘤直径≤4 cm，无论浸润深度，此时淋巴结转移到第 4、第 5、第 6 组淋巴结的可能性很低。对于早期近端胃癌和食管胃结合部腺癌，近端胃切除术与全胃切除术 5 年总体生存率相当。近端胃切除术在术后保留残胃和幽门功能、改善患者营养状况方面更有优势。针对近端胃切除术术后反流性食管炎，有多种重建术式。其中，双浆肌瓣吻合术具有良好的抗反流效果，可以明显减少食物残留发生率，提高了患者术后生存质量，实现了现代胃癌外科“个体化-精准化-保功能-重质量”的要求。

关键词　胃肿瘤；胃切除术；双肌瓣吻合术
中图分类号：R735.2

Current development status of surgical resection and reconstruction methods for proximal gastric cancer

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Abstract　Gastric cancer is a common malignant tumor, and in recent years, the incidence of proximal gastric cancer and gastroesophageal junction adenocarcinoma has significantly increased. Multiple studies have shown that for proximal gastric cancer or gastroesophageal junction adenocarcinoma, when the tumor diameter is ≤4 cm, regardless of the depth of infiltration, the likelihood of lymph node metastasis to the No. 4, No. 5 and No. 6 groups is very low. For early proximal gastric cancer and gastroesophageal junction adenocarcinoma, proximal gastrectomy has a comparable 5-year overall survival rate to total gastrectomy. Proximal gastrectomy has advantages in preserving remnant stomach and pyloric function after operation, as well as improving the nutritional status of patients. Various reconstruction procedures are available for postoperative reflux esophagitis after proximal gastrectomy. Among them, double seromuscular flap technique has good anti-reflux effects, significantly reducing the occurrence of food residue and improving the postoperative survival quality of patients, meeting the requirements of modern

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gastric cancer surgery for individualization, precision, functional preservation, and quality improvement.

Key words Stomach Neoplasms; Gastrectomy; Double Seromuscular Flap Technique

CLC number: R735.2

胃癌是世界上最常见的恶性肿瘤之一，在全世界恶性肿瘤相关死亡中位居第四[1]。在中国，胃癌的发病率排在第五位，而死亡数排在全部恶性肿瘤的第三位[2]。近年来近端胃癌（胃上1/3）和食管胃结合部腺癌发生率明显增加[3]，尤其是在亚洲国家[4]。在美国，食管胃结合部腺癌发病率近35年来增长近2.5倍，约达2/10万[5]，且1996—2016年，近端胃癌的比例从29.42%上升到36.88%[6]。日本国立癌症中心医院[7]数据显示：近半世纪来，食管胃结合部腺癌比率上升了7.3%。我国四川大学华西医院单中心胃癌外科病例的登记研究[8]发现，25年间食管胃结合部腺癌所占比例由22.3%增至35.7%。随着近端胃癌以及食管胃结合部腺癌发病率的增加，更需要外科医生针对不同部位、不同临床分期的肿瘤选择合适的手术切除及重建方式，进行合理精准化外科手术[9]。因此，如何在确保根治前提下，对近端胃癌和食管胃结合部腺癌选择符合解剖和生理的重建术式成为探讨的焦点。

1 近端胃癌术式选择原则

目前，无论早期胃癌还是部分进展期胃癌腹腔镜下远端胃癌根治手术都有高级别循证医学证据，如韩国KLASS01研究[10]、KLASS02研究[11-12]、日本JCOG0912研究[13]、JCOG0703研究[14]、JLSSG0901研究[15]、中国CLASS01研究[16-17]等已证实：腹腔镜手术与传统的开腹手术相比，技术可行性和肿瘤学安全性均无明显差异，腹腔镜手术具有微创、快速康复、改善生存质量等优势。而对于早期胃癌的腹腔镜全胃切除术，韩国KLASS03研究[18]显示，术后并发症发生率20.6%、死亡发生率0.6%。中国CLASS02研究[19]表明，腹腔镜全胃切除术对比开腹手术死亡和术后并发症发生率无显著差异。日本JCOG1401研究[20]探索了腹腔镜全胃和近端胃切除在cT1N0/T1N1/T2N0近端胃癌中的应用，结果显示手术中转率为1.7%，术后3~4级不良事件发生率为29%，证明了腹腔镜全胃切除和腹腔镜近端胃切除在早期近端胃癌应用中的安全性。因此，对于近端胃癌和胃食管结合部癌，中国临床肿瘤学会（Chinese Society of Clinical Oncology，CSCO）指南[21]和美国国立综合癌症网络（National Comprehensive Cancer Network，NCCN）指南[22]认为全胃切除术和近端胃切除术均适用。但全胃切除术后容易出现餐后饱胀或进食障碍、倾倒综合征、维生素B_{12}缺乏、铁离子缺乏、小肠（盲袢）细菌过度生长等营养问题。因此，考虑营养等问题可以选择近端胃切除术[22]。日本第6版胃癌治疗指南[23]推荐对近端胃癌进行近端胃切除术，但是证据级别C级。因此，对于近端胃癌和胃食管结合部腺癌，选择全胃切除还是近端胃切除术仍有争议，而且对于近端胃癌有无必要清扫第3、第5、第6和第4d组淋巴结仍未达成共识。不同淋巴结清扫范围和胃切除范围决定后续重建术式。

1.1 近端胃癌淋巴结转移情况

Matsuda等[24]对原发性cT1N0M0食管胃结合部腺癌患者（Siewert I型和II型）研究发现，对于病灶直径<4 cm的早期食管胃结合部腺癌，发生淋巴结转移的患者比例低（13%），淋巴结转移主要分布于第3、第108组淋巴结（Siewert I型）和第7、第9组淋巴结（Siewert II型）。日本联合胃癌学会和食管癌学会[25]前瞻性地分析了Siewert II型cT2~T4的食管胃结合部腺癌患者淋巴结转移状况，研究表明，对于腺癌来说，第5、第6、第4d、第4sb、第4sa淋巴结转移率分别为1.1%、1.7%、2.2%、0.8%、4.2%，而在鳞癌中均为0%。但如果肿瘤直径超过6.0 cm，则胃周（第4d、第5或第6组）淋巴结转移率在6%~10.7%。因此建议对直径≤4 cm的Siewert II型食管胃结合部腺癌行近端胃切除术，如果肿瘤直径过大，再考虑行全胃切除术。Yamashita等[26]研究结果显示：对于肿瘤直径<4 cm的食管胃结合部腺癌，第4sa、第4sb、第4d、第5、第6组淋巴结转移率极低（<2%），且与肿瘤位置和肿瘤T分期无关。另一项纳入202例行近端胃切除术T2期和T3期近端胃癌患者的研究[27]结果显示，第4sa、第4sb、第4d、第5、第6、第8a、第12a组淋巴结转移率分别为3.47%、1.49%、

0.99%、0.00%、0.00%、2.02%、0.006%，患者 5 年总体生存率为 72.9%，因此推荐近端胃切除术治疗 T2 期和 T3 期近端胃癌。通过以上研究可以看出，当近端胃癌肿瘤直径≤4 cm，第 4、第 5 和第 6 组淋巴结转移率极低，预防清扫无价值。

1.2　近端胃切除术和全胃切除术生存率比较

Toyomasu 等[28]比较了 102 例近端胃和 69 例全胃切除患者预后情况，结果显示两组患者术后 5 年总体生存率差异均无统计学意义（97.1% *vs.* 94.2%，*P*=0.69）。Lee 等[29]研究也表明对于近端胃癌和 Siewert II型食管胃结合部腺癌，近端胃和全胃切除患者术后无复发生存率（86.7% *vs.* 83.3%，*P*=0.634）和综合生存率（61.7% *vs.* 68.3%，*P*=0.676）差异均无统计学意义。JOCG1401 试验[20, 30]发现，早期胃癌近端胃切除术和全胃切除术的 5 年生存率和局部复发率差异均无统计学意义。Ikeguchi 等[31]也发现，对于早期近端胃癌，近端胃切除术和全胃切除术的 5 年总体生存率（88.7% *vs.* 87.6%，*P*=0.971）和疾病特异性生存率（97.1% *vs.* 93.4%，*P*=0.553）差异均无统计学意义。Ahn 等[32]比较腹腔镜近端胃切除术和腹腔镜全胃切除术对 cT1N0M0 或 cT2N0M0 的近端胃癌患者的临床结局影响，结果表明两组的 5 年生存率无明显差异。由此可见，对于早期近端胃癌，近端胃切除与全胃切除术具有相同的根治性和肿瘤学疗效。《日本胃癌治疗指南》[23]也指出，对于早期近端胃癌，可以选择根治性全胃切除或者根治性近端胃切除术。

1.3　近端胃切除术切除范围

综合近端胃癌淋巴结转移情况和近端胃切除术患者术后生存率情况，对于肿瘤直径≤4 cm，无论浸润深度的近端胃癌或食管胃结合部腺癌，此时淋巴结转移到第 4、第 5 和第 6 组淋巴结的可能性很低，故没有必要进行全胃切除术，根治性近端胃切除术是一个良好的选择。日本胃癌治疗指南[23]规定近端胃切除术应用于 cT1N0M0 近端胃癌和食管胃结合部腺癌时，淋巴结清扫范围为 D1 或 D1+，此时不必要清扫胰腺远端的淋巴结。而如果近端胃切除术用于进展期胃癌，则行 D2 淋巴结清扫，此时需要清扫胰腺远端的淋巴结。CSCO 指南[21]和日本胃癌治疗指南[23]都建议近端胃切除术后应保留一半以上的远端残胃。

2　全胃切除和近端胃切除的利和弊

与全胃切除相比，近端胃切除术在术后胃肠功能、营养状况等方面具有一定优势，而且可以保留远端残胃和幽门的功能[33-34]。全胃切除术的优势在于彻底清扫可能转移的淋巴结、避免食管胃反流，但全胃切除术后胃的储存、机械研磨、分泌、释放内因子等功能永久丧失，患者可出现术后营养不良，包括术后体质量下降、贫血、维生素 B_{12} 下降、腹泻、倾倒综合征等，且会降低患者术后行内镜检查可行性[35-36]。Takiguchi 等[37]在一项多中心研究中报道，近端胃切除术在体质量减轻、额外膳食必要性、发生腹泻和倾倒综合征等方面优于全胃切除术，特别是在接受了食管胃吻合术的患者中。Inada 等[38]报道，残胃超过 3/4 的患者与残胃只有 2/3 的患者相比，腹泻评分和额外膳食必要性更低。

但相比全胃切除术，接受近端胃切除术的患者更容易出现胃胀、胃灼热感、反流性食管炎、吻合口瘘和吻合口狭窄，尤其见于接受单纯食管-残胃吻合术的患者[32-33]。据报道[32]，单纯食管-残胃吻合术后反流性食道炎达到 62%，术后反流性食管炎、吻合口瘘、吻合口狭窄发生率均较高。对于肿瘤学安全性，近端胃切除术肿瘤学安全性主要取决于保留的淋巴结范围对患者远期生存的影响。

3　针对反流性食道炎的各种近端胃切除重建术式及评价

近端胃切除术如何进行消化道重建尚未达成共识，目前仍缺乏高级别的循证医学证据。如果仅行简单的食管-残胃吻合术，尽管在营养方面获益，但术后反流性食道炎的高发生率严重影响患者生存质量，近期疗效不如根治性全胃切除术[32]。如能减少反流性食管炎发生率，近端胃切除术将是早期近端胃癌和食管胃结合部腺癌的可选择治疗方式，对比全胃切除患者的生活质量及营养学指标均可能有明显的提高。近端胃切除术各种重建术式主要针对反流问题，有通过增加残胃和食管间距离抗反流法（食管-空肠吻合）如：空肠间置术和空肠袋间置术以及双通道重建术（double tract）等；也有通过细化和延长残胃抗反流法（食

管–残胃吻合）如：管状胃和Giraffe重建术式等；或者通过重建类贲门结构抗反流如：浆肌层包裹、重建His角、食管胃侧壁吻合（side overlap with fundoplication by Yamashita，SOFY法）、右开襟单肌瓣成形术（right sided overlap with single flap valvuloplasty，ROSF法）、裂隙法、双浆肌瓣吻合术等方法[39–43]，但是手术的安全性，可行性以及抗反流效果均有一定差异。有Meta分析[44]报道近端胃切除术后各种重建术式的常见并发症发生情况，双通道重建术后反流性食道炎、吻合口狭窄、吻合口瘘、食物残留的发生率分别为9.6%、3.5%、3.9%和39.6%；空肠袋间置术后反流性食道炎、吻合口狭窄、吻合口瘘、食物残留的发生率分别为13.8%、8.3%、17.2%和58.6%；空肠间质术后反流性食道炎、吻合口狭窄、吻合口瘘、食物残留的发生率分别为13.8%、11.3%、4.1%和41.5%；食管胃吻合术后反流性食道炎、吻合口狭窄、吻合口瘘、食物残留的发生率分别为19.3%、13%、4.6%和21.8%；双浆肌瓣吻合术后反流性食道炎、吻合口狭窄、吻合口瘘、食物残留的发生率分别为8.9%、5.5%、1.4%和3.9%。日本相关文献[33]也综合报道了各项研究中近端胃切除术后各种重建方式并发症发生率，其中单纯食管胃吻合术为3.1%~24%，管状胃食管吻合术为0~20%，双通道重建术为11.6%，空肠间置术为0~31.6%，空肠袋间置术为3.6%~25%，双浆肌瓣吻合术为3%~25%；而术后反流性食管炎发生率分别为20%~65.2%、5.7%~30.8%、4.70%，0~33.3%，4%~27.8%和0~8.3%。SOFY法操作方法较简单，但是抗反流效果在不同个体间差异较大[33]，根据Zhang等[45]研究结果，SOFY法术后反流性食道炎发生率高达42.9%。ROSF法术后反流性食道炎发生率为5%，20%的患者出现轻度吞咽困难，无吻合口狭窄发生，重建效果较好[43, 46]；裂隙法便于全腹腔镜下完成，抗反流效果好，安全可行[47]，但这两种方法仍需更多的研究来进一步证实远期治疗效果。因此，双浆肌瓣吻合术是一个成熟、安全、可有效抗反流的近端胃切除重建术式选择，可以明显减少食物残留发生率，提高患者生存质量，改善患者的营养状态，增加患者体质量。

4 双浆肌瓣吻合术手术步骤和相关循证医学证据

双浆肌瓣吻合术是日本学者Kamikawa在1998年对近端胃溃疡的一种食管胃重建方法，该方法于2016年起被引入到腹腔镜近端胃癌根治术中[48–49]。操作者在远端残胃前壁使用电刀制造双浆肌瓣（2.5 cm宽，3.5 cm高），于黏膜窗下端开口，将胃黏膜窗上端固定于食管后壁断端5 cm处；然后将食管与残胃开放的黏膜吻合，最后用双浆肌瓣完全覆盖吻合口（图1–2）（视频1）。双浆肌瓣吻合术仿生理性贲门重建，将食管下段“种”在胃壁浆肌层与黏膜层之间，进食后胃压力增加，压闭食管下段，达到抗反流效果。不仅可以减少术后反流性食管炎发生，还可以促进对食物的吸收摄入，改善患者术后营养状况。已有文献[50]初步证实了双浆肌瓣吻合术在腹腔镜治疗早期近端胃癌中的疗效。Muraoka等[48]对24例早期近端胃癌患者进行了腹腔镜近端胃切除双浆肌瓣吻合术，术后没有患者出现反流症状，也没有患者出现肿瘤复发。Hayami等[51]比较腹腔镜近端胃切除双浆肌瓣吻合术和腹腔镜全胃切除术对早期近端胃癌患者的术后疗效，研究表明，双浆肌瓣吻合术后患者有更低的吻合口相关并发症发生率（4.7% *vs.* 17.2%，*P*=0.093），更短的术后平均住院时间（10 d *vs.* 13 d，*P*=0.002），更少反流性食管炎发生率（2.3% *vs.* 14.9%，*P*=0.06）和更好的营养状态。

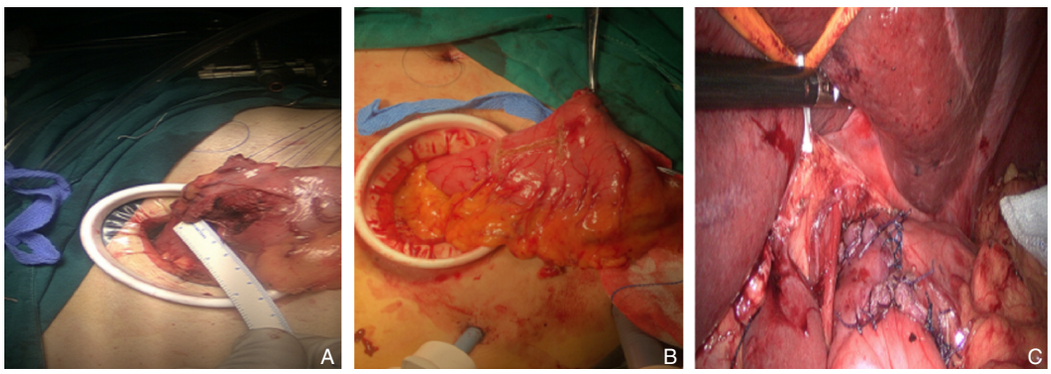

图 1　双浆肌瓣吻合术术中情况　A–B：在远端残胃前壁使用电刀制造双浆肌瓣；C：食管与残胃吻合，最后用双浆肌瓣完全覆盖吻合口

Figure 1　Intraoperative views of double seromuscular flap technique　A–B: Creation of the double seromuscular flaps on the anterior wall of the distal remnant stomach using an electric knife; C: Anastomosis between the esophagus and the residual stomach, with complete coverage of the anastomotic site by double seromuscular flaps

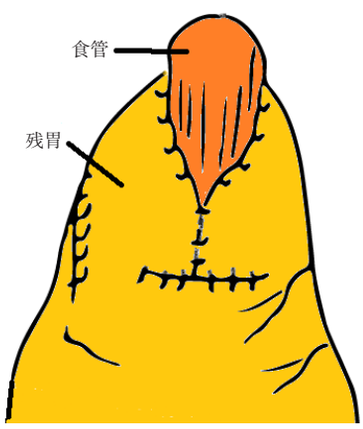

图 2　双浆肌瓣吻合结果示意图

Figure 2　Illustration of the result of double seromuscular flap anastomosis

视频 1　双浆肌瓣吻合术操作

Video 1　The operation of double seromuscular flap technique

扫描至移动设备观看手术视频：

http://www.zpwz.net/zgptwkzz/article/html/pw240098

5　结　语

综上所述，目前，胃癌外科手术发展的主流方向，正在从“扩大化和标准化手术切除”逐渐向“个体化和精准化手术”转变，从一味追求“手术切除范围和手术技巧”为主导，逐渐转变为以“根治基础上提高手术安全性和患者术后生活质量”为目标。因此，在保证肿瘤根治性前提下，建立一个理想的近端胃切除重建术式，实现保留胃正常解剖结构和生理功能，改善患者术后生命质量成为早期胃癌研究热点。对于近端胃癌和食管胃结合部腺癌来说，传统的全胃切除术虽然最大程度实现了肿瘤根治，但是由于切除了全胃，患者易出现营养失调和倾倒综合征。近端胃癌和食管胃结合部腺癌不易转移到第 4、第 5 和第 6 组淋巴结，因此，对于直径≤4 cm 的近端胃癌和食管胃结合部腺癌，可以行近端胃切除术以最大限度保留胃和幽门功能。经典的近端胃切除胃食管重建术或胃空肠重建术，虽然保留了残胃，但是术后并发症发生率高，尤其是反流性食管炎大大降低了患者术后生存质量。而近端胃切除食管胃双浆肌瓣吻合术，不仅保留了残胃的消化功能，还减少了反流的发生率，提高了患者术后生存质量和营养状况，实现了现代胃癌外科“个体化–精准化–保功能–重质量”的要求。

利益冲突：所有作者均声明不存在利益冲突。

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