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介绍一种防滑脱双气囊胃管的设计*

严小鹏^{1,2#} 徐新华^{1#} 吕毅^{1,2△} 马佳^{1,2,3} 陆建文^{1,2} 徐向华^{1,2} 马锋²

(1 西安交通大学医学院第一附属医院肝胆外科 陕西 西安 710061; 2 西安交通大学先进外科技术与工程研究所 陕西 西安 710061; 3 陕西省人民医院肿瘤外科 陕西 西安 710068)

摘要:目前经鼻胃肠减压术中鼻胃管主要依靠胶布黏贴来实现固定,此法在实际应用中存在很多缺点,诸如:部分患者对胶布过敏;鼻翼及脸颊部油脂分泌旺盛导致黏贴效果不牢靠;面部烧伤的患者无法固定;儿童、烦躁患者、对胃管刺激耐受性差的患者、部分患者在活动中对胃管的无意牵拉等常导致非计划性拔管,这样再次置管不仅增加患者痛苦,而且加大了医护人员工作量,在某些情况下还会延误诊疗。为解决现有传统胃管易脱出难题及特殊患者胃管难以固定的问题,笔者设计了一种防滑脱双气囊胃管。该新型胃管在结构设计上通过增加两个气囊来实现防滑脱和体外免胶布固定的目的。当双气囊充入适量气体后,胃内气囊受贲门制约、鼻腔内气囊受鼻前庭制约,不仅可以有效防止胃管意外脱出,并且无需用胶布固定胃管的体外段。该胃管尤其适用于传统胃管固定困难的患者。文中将详细介绍防滑脱双气囊胃管的结构设计、使用方法、工作原理及临床应用优势。

关键词:气囊;胃管

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An Introduction of one Novel Type Slippage-Preventing Bi-gasbag Stomach Tube Design*

YAN Xiao-peng^{1,2#}, XU Xin-hua^{1#}, LV Yi^{1,2△}, MA Jia^{1,2,3}, LU Jian-wen^{1,2}, XU Xiang-hua^{1,2}, MA Feng²

(1 Department of Hepatobiliary Surgery, First Affiliated Hospital, College of Medicine, Xi'an Jiaotong University, Xi'an, Shaanxi, 710061, China;

2 XJTU Research Institute of Advanced Surgical Technology and Engineering, Xi'an Jiaotong University, Xi'an, Shaanxi, 710061, China;

3 Department of Surgical Oncology, Shaanxi Provincial People's Hospital, Xi'an, Shaanxi, 710068, China)

ABSTRACT: Nowadays nasogastric tube for gastrointestinal decompression is usually immobilized with adhesive tape, which has many disadvantages in practical application. For example: some patients are allergic to the adhesive tape; the excessive grease secretion of ala nasi and cheek often leads to the fixation failure; the method can't be applied to the face-burnt patients; unplanned tube drawing always happens in children, agitated patients, patients who have poor tolerance for the gastrointestinal discomfort, unintentional tract pulling because of accidentally pulling. Under these circumstances, the secondary cathetering often results in the increase of patient suffering and the medical-care work. In some cases, this even delays medical diagnosis and treatment. Thus, a kind of slippage-preventing bi-gasbag stomach tube is invented to solve the problems mentioned above. Slippage-preventing and no adhesive tape can be achieved by two added sacculus of the new type stomach tube. Nasal vestibule and cardia can respectively immobilize the gasbag in the corresponding position when gases come in, which can avoid the tube slipping and adhesive tape using. These novel type stomach tubes especially apply to the patients who have difficulties in the traditional stomach tube immobilization. This article will introduce the structure design, usage, operating principle and clinical application advantages of the novel stomach tube further.

Key words: Gasbag; Nasogastric tube

Chinese Library Classification(CLC): TH77 **Document code:** A

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作者简介: 严小鹏(1984-), 男, 博士研究生, 住院医师, 主要研究方向: 肝移植、门脉高压症、磁外科、再生医学, 电话: 15332432878

E-mail: yanxiaopeng99@163.com

徐新华(1984-), 女, 大学本科, 护师, 主要研究方向: 外科重症患者临床护理

电话: 029-85323900, E-mail: xuxinhua99@163.com

共同第一作者

△ 通讯作者: 吕毅, E-mail: luyi169@126.com

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前言

经鼻胃肠减压术通过负压吸引装置,将胃肠道中积聚的气体和液体吸出,以降低胃肠道内压力,在临床医疗实践中应用广泛。全身麻醉前行胃肠减压可预防患者误吸;腹部大手术的围手术期持续胃肠减压可减轻胃肠膨胀,增加手术安全性;胃肠道手术患者持续胃肠减压可有效降低胃肠道压力,减轻吻合口张力,促进吻合口的愈合;上消化道大出血时行胃肠减压可对出血进行实时观察,并可经胃管注入止血药起到治疗疾病的目的;肠梗阻患者通过胃肠减压可减轻腹胀、降低肠腔压力,改善肠壁血运,减少肠道细菌移位;急性胰腺炎患者通过胃肠减压不仅可缓解因麻痹性肠梗阻导致的腹胀和呕吐,还可减少胃液对胰酶分泌的刺激作用^[1]。

经鼻胃肠减压术一般使用的是由硅橡胶制成的在头端开有侧孔,在尾端连有接头的中空导管,该导管的固定依赖于胶布将胃管固定在鼻翼及面部^[2-5]。这种传统固定方法由于鼻翼部皮脂和汗液分泌旺盛,常导致胶布粘贴不牢,部分患者会因体位变换、打喷嚏等原因造成胃管滑脱^[6-7],有的患者因对胶布过敏而出现皮肤溃烂^[8],对面部烧伤的患者此法更是难以实施^[9-12],胃管的鼻腔部也常常会对患者造成鼻腔压疮和鼻粘膜损伤^[13]。另外,对于一些患者常常不能很好地配合治疗,自行将胃管拔出的占非计划性拔管的62.9%^[6]。再者,反复插胃管给患者带来更多痛苦,增加医护人员工作量,有时还会严重影响疾病的治疗。也有临床护理工作对现有胃管的固定提出了多种改进方法^[14-20],但最终都未能从根本上有效解决。所以,传统的胃管在实际使用中有很多弊端,亟需对其进行改进,以满足临床实际需要。

针对传统胃管的种种弊端,我们设计出了防滑脱双气囊胃管。该新型胃管已获国家专利授权(专利号:201120058732.8)^[21]。通过在传统胃管结构的基础上附加两个气囊以达到防滑脱、免胶布固定和减轻鼻腔损伤的目的。

1 设计思路

在胃管头端紧随侧孔之后和靠近胃管尾端分别附加一个气囊,这两个气囊均环绕胃管侧壁一周,并分别与胃管侧壁上的两个气道相交通,这两个小气道在尾端与胃管主体分离,并

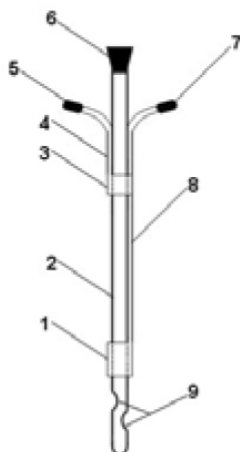


图1 防滑脱双气囊胃管示意图

Fig.1 A diagram of the anti-extubation double-balloon nasogastric tube

分别连有气道接头。用注射器经气道接头可控制气囊的充气和放气。

2 胃管结构

设计的防滑脱双气囊胃管结构如图1:图中2为胃管主体,在胃管主体头端有侧孔9,用于引流胃液,胃管主体的尾端6为胃管接头,这是传统胃管的基本结构。新型防滑脱双气囊胃管在此基础上设计有胃内气囊1和鼻腔内气囊3,胃内气囊1通过胃内气囊气道8和胃内气囊气道接头7相连。鼻腔内气囊3通过鼻腔内气囊气道4与鼻腔内气囊气道接头5相连。胃内气囊气道8和鼻腔内气囊气道4在实际加工时是位于胃管主体2的侧壁上的,因此这两个气道并不增加胃管的直径。在材料选择上,胃管主体2选用硅橡胶,胃内气囊1和鼻腔内气囊3选用弹性优良的乳胶,这样可保证当气囊处于未充气状态时能紧紧包绕胃管主体2,使气囊处的胃管直径也不会明显增加,与传统胃管相比就不会增加胃管置入难度和患者的痛苦。

3 使用过程

胃管置入前,先用注射器经鼻腔内气囊气道接头5和胃内气囊气道接头7注入适量空气,以检查气囊和气道是否完好无破损,然后抽净气囊内气体。常规操作置入胃管,当胃管头端送至胃窦部后,经胃内气囊气道接头7注入空气约50mL,将胃管轻微向外牵拉,感觉有轻度弹性阻力时,表明贲门已阻止胃内气囊向外移动。此时将胃管再次向胃窦部送入,使鼻腔内气囊3正好位于患者鼻前庭,经鼻腔内气囊气道接头5注入空气约1mL,以患者舒适为宜,胃管置入操作即完成,无需胶布外固定。图2为防滑脱双气囊胃管使用过程中状态示意图。

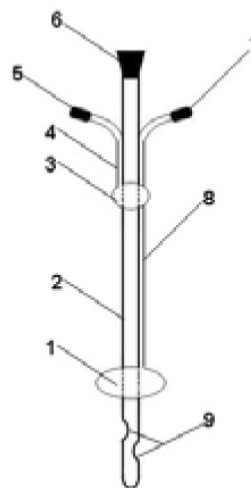


图2 防滑脱双气囊胃管使用状态示意图

Fig.2 A diagram of operation condition of the anti-extubation double-balloon nasogastric tube

当各种非医疗需要的原因牵拉胃管时,首先鼻腔内气囊3会脱出,以提醒患者注意。如果牵拉因素未消除或牵拉力继续作用时,胃内气囊1便会卡在贲门下端,从而阻止胃管继续脱出,起到保护作用。当需要拔出胃管时,可用注射器经鼻腔内气囊气道接头5和胃内气囊气道接头7将空气抽净,则胃内气囊1和鼻腔内气囊3自动回缩,紧贴胃管主体2,常规方法缓慢拔

出胃管即可。

4 结论

防滑脱双气囊胃管优于传统胃管主要体现在以下几点:①胃内气囊能有效预防胃管滑脱,尤其适用于儿童、烦躁患者以及对胃管刺激耐受程度低的患者,能阻止其自行将胃管拔出;②胃内气囊充气状态下可使胃管前端悬于胃内,避免胃管前端的侧孔与胃壁相贴,从而充分发挥引流功能;③鼻腔内气囊充气后能预防胃管脱出,同时减少胃管头端活动时对鼻翼的损失,尤其适用于需要长时间留置胃管的患者;④在胃内气囊和鼻腔内气囊双重保护下,体外段胃管无需胶布等其他固定措施,尤其适用于面部烧伤或烫伤以及对胶布过敏的患者;⑤如有患者对鼻腔内气囊有不适时,可灵活选择是否使用该气囊,都不会影响该胃管的防滑脱功能;⑥护士操作简单,且并不增加患者的不适感;⑦有效的防滑脱功能能保证胃管持续有效地引流,避免患者反复置管,同时减少护士工作量。

防滑脱双气囊胃管经志愿者初步验证显示,其防滑脱功能和免胶布固定的特点体现出巨大的优势。防滑脱双气囊胃管可推向临床使用,并将产生良好的社会效益和经济效益。

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