



(12) **EUROPEAN PATENT APPLICATION**
published in accordance with Art. 153(4) EPC

(43) Date of publication:
01.02.2017 Bulletin 2017/05

(51) Int Cl.:
A61B 17/3205 ^(2006.01)

(21) Application number: **14887039.7**

(86) International application number:
PCT/CN2014/000619

(22) Date of filing: **25.06.2014**

(87) International publication number:
WO 2015/143589 (01.10.2015 Gazette 2015/39)

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME

• **Ling, Andong**
Chaoyang District, Beijing 100029 (CN)

(30) Priority: **28.03.2014 CN 201410121274**

(72) Inventors:
• **Ling, Bin**
Chaoyang District, Beijing 100029 (CN)
• **Ling, Andong**
Chaoyang District, Beijing 100029 (CN)

(71) Applicants:
• **Ling, Bin**
Chaoyang District, Beijing 100029 (CN)

(74) Representative: **Gulde & Partner**
Patent- und Rechtsanwaltskanzlei mbB
Wallstraße 58/59
10179 Berlin (DE)

(54) **PROTECTION DEVICE FOR PREVENTING SPREAD AND METASTASIS OF TUMOURS IN LAPAROSCOPIC SURGERY**

(57) Disclosed in the invention is a protection device for preventing tumor dissemination and tumor metastasis in a laparoscopic surgery which comprises a soft bag (1) for containing a resected tumor during the surgery provided in the abdominal cavity through a puncture in the abdominal wall, and a sealing thread (2) provided around the mouth of the soft bag (1). The sealing cable (2) is tightened and ligated so that the mouth of the soft bag (1) is closed in the pelvic cavity or the abdominal cavity; or the closed mouth of the soft bag (1) can be stretched out of the abdominal cavity through the puncture in the abdominal wall via the sealing thread (2). An instrument can be put in the soft bag in the abdominal cavity through the mouth of the soft bag (1) outside the abdominal cavity, or the instrument can be put into the soft bag in the abdominal cavity through a conduit shaped structure for a breaking operation (3) or a conduit shaped structure for an auxiliary operation (4) and the laparoscope can be put into for observation through a conduit shaped structure for peering (5). The protection device can serve as an auxiliary device in the laparoscopy surgery, in the closed abdominal cavity, a tumor tissue sample is put into the relatively closed protection device, broken and taken out under observation of the laparoscope, avoiding iatrogenic dispersion of a malignant tumor.

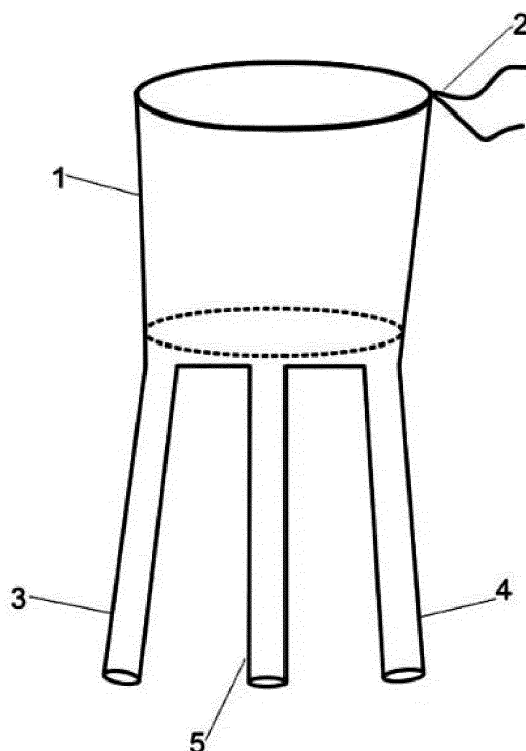


Fig. 1

Description

Technical field

[0001] The present invention relates to a surgery auxiliary device, more specifically to a protection device for preventing tumor dissemination and tumor metastasis in a laparoscopic surgery.

Background

[0002] The laparoscope surgery is characterized in that an incision in the abdominal wall is small and hurt and pain from a large incision in the abdominal wall in a traditional surgery are changed, so that it is known as "keyhole" surgery. The volume of tumor resected in the pelvic cavity or the abdominal cavity in the surgery is often large and it is difficult to take out the tumor through a puncture in the abdominal cavity, and in clinical practice, the tumor is needed to be broken by a mastax in the abdominal cavity to be taken out. However, tumor debris generated in the breaking process can easily cause the tumor to disseminate and implant in the pelvic cavity or the abdominal cavity, seriously threatening a patient's life.

Summary

[0003] The invention provides a protection device for preventing tumor dissemination and tumor metastasis in a laparoscopic surgery in order to avoid the existing shortcomings in the prior art as above, wherein tumor tissues resected in the abdominal cavity are isolated in the closed cavity to be broken, and tumor debris generated in the breaking process are confined in the closed cavity to avoid dissemination and metastasis.

[0004] The invention adopts the following technical solutions to solve the technical problem:

A protection device for preventing tumor dissemination and tumor metastasis in a laparoscopic surgery, comprises a soft bag (1) for containing a resected tumor during the surgery provided in the abdominal cavity through a puncture in the abdominal wall, and a sealing cable (2) provided around the mouth of the soft bag (1), the sealing cable (2) being tightened and ligated so as to enable the mouth of the soft bag (1) to be closed, the closed mouth of the soft bag (1) can be stretched out of the abdominal cavity through the puncture in the abdominal wall via the sealing thread (2), and an instrument can be put in the soft bag in the abdominal cavity through the mouth of the soft bag (1) outside the abdominal cavity.

[0005] In the protection device for preventing tumor dissemination and tumor metastasis in the laparoscopic surgery, a conduit communicated with the soft bag is provided to the tail area of the soft bag (1), the conduit can

be a single (3) or multiple (4 or 5), an external port of the conduit can be maintained outside the abdominal cavity or stretched out of the abdominal cavity through the puncture(s) in the abdominal wall, and the instrument can be put in the soft bag in the abdominal cavity through the external port of the conduit.

[0006] In the protection device for preventing tumor dissemination and tumor metastasis in the laparoscopic surgery, the external port of the conduit can be closed and the soft bag (1) is aerated through the external port of the conduit, inflating the soft bag (1).

[0007] In the protection device for preventing tumor dissemination and tumor metastasis in the laparoscopic surgery, the external port of the conduit can be positioned into an abdominal wall puncture outfit with a one-way gas valve, the instrument is supported by the abdominal wall puncture outfit; and the one-way gas valve is the one-way gas valve opened towards the soft bag in one direction.

[0008] In the protection device for preventing tumor dissemination and tumor metastasis in the laparoscopic surgery, the soft bag (1) is a transparent body, and the instrument which passes through conduit includes a grasper and a mastax.

[0009] In the protection device for preventing tumor dissemination and tumor metastasis in the laparoscopic surgery, the soft bag (1) is an opaque body, and the instrument which passes through conduit includes a grasper, a mastax and a laparoscope.

[0010] Compared to the prior art, the invention has the advantages as follows.

1. The invention provides a protective measure for preventing tumor dissemination and tumor metastasis based on conventional method for breaking a tumor adopted in the laparoscopic surgery.
2. The application of the invention enables the laparoscope to be put into the soft bag through the conduit to directly observe the tumor breaking process, avoiding broken cutters to injury normal tissues.
3. The application of the invention also enables the laparoscope to observe the tumor breaking process through the transparent soft bag, avoiding broken cutters to injury normal tissues.
4. The application of the invention aerates the soft bag through the conduit in the existing closed inflated abdominal cavity in the laparoscope surgery to form another relatively closed space, greatly facilitating the breaking operation of the tumor tissues.

Brief description of the drawings

[0011] The drawing is the structural representation of the protection device for preventing tumor dissemination and tumor metastasis in the laparoscopic surgery according to the invention.

[0012] Reference numbers: 1. soft bag; 2. sealing thread; 3. conduit shaped structure for breaking opera-

tion; 4. conduit shaped structure for auxiliary operation;
5. conduit shaped structure for peering.

Detailed description of the preferred embodiments

[0013] Reference to the drawing, the structure of the protection device for preventing tumor dissemination and tumor metastasis in the laparoscopic surgery according to the present embodiment comprises a soft bag (1) for containing a resected tumor during the surgery which is provided in the abdominal cavity through a puncture in the abdominal wall, and a sealing cable (2) provided around the mouth of the soft bag (1), the sealing cable (2) is tightened and ligated after a tumor sample is put into the soft bag (1) so as to enable the mouth of the soft bag (1) to be closed in the pelvic cavity or the abdominal cavity; or the closed mouth of the soft bag (1) can be stretched out of the abdominal cavity through the puncture in the abdominal wall via the sealing thread (2), and a instrument can be put into the soft bag in the abdominal cavity through the mouth of the soft bag (1) outside the abdominal cavity.

[0014] A conduit communicated with the soft bag is provided at the tail area of the soft bag (1), and an external port of the conduit can be maintained outside the abdominal cavity or stretched out of the abdominal cavity through other puncture in the abdominal wall, and the instrument can be put into the soft bag in the abdominal cavity through the external port of the conduit. An abdominal wall puncture outfit with a one-way gas valve is provided in the external port of the conduit and the soft bag (1) is aerated through the external port of the conduit, inflating the soft bag (1). The instrument is supported by the abdominal wall puncture outfit; and the one-way gas valve is the one-way gas valve opened towards the soft bag in one direction.

[0015] In specific implementation, the soft bag (1) can be a transparent body, and the instrument positioned in the soft bag includes a grasper and a mastax. For this structure, the laparoscope is positioned in the outside of the transparent body to observe the operation. The soft bag (1) can also be an opaque body, and the instrument includes a grasper, a mastax and a laparoscope. For this structure, the laparoscope is positioned in the interior of the opaque body to observe the operation.

Operation process:

[0016] The soft bag is placed into the abdominal cavity through the puncture in the abdominal wall after fold or roll-up, the resected tumor tissue sample is put into the soft bag, the sealing thread is stretched to close the mouth; or the sealing thread is sequentially stretched to enable the mouth of the soft bag to be pulled out of the abdominal cavity through the puncture in the abdominal wall, the instrument is put into the soft bag through the mouth of the soft bag to carry out the breaking operation, and the mouth-closed soft bag is directly pulled out after

the breaking operation.

[0017] The external port of the conduit is maintained outside the abdominal cavity or stretched out of the abdominal cavity through punctures (3, 4, 5), and the laparoscope or other instrument is put into the soft bag through the conduit for inflation, observation and operation.

[0018] The soft bag is aerated to be sufficiency expanded in the abdominal cavity, that is, another relatively closed independent space is constructed in the existing closed inflated abdominal cavity, the laparoscope can be directly put into the independent space through the conduit for observation or be positioned outside the transparent soft bag for observation, the entire process for breaking tumor is completed in the closed independent space, the broken tumor tissues are taken out in the independent space one by one, and the tumor debris tissues generated during the process are enclosed in the independent space.

Claims

1. A protection device for preventing tumor dissemination and tumor metastasis in a laparoscopic surgery, comprises a soft bag (1) for containing a resected tumor during the surgery provided in the abdominal cavity through a puncture in the abdominal wall, and a sealing thread (2) provided around the mouth of the soft bag (1), the sealing thread (2) being tightened and ligated so that the mouth of the soft bag (1) is closed in the pelvic cavity or the abdominal cavity; or the closed mouth of the soft bag (1) can be stretched out of the abdominal cavity through the puncture in the abdominal wall via the sealing thread (2), and an instrument can be put into the soft bag in the abdominal cavity through the mouth of the soft bag (1) outside the abdominal cavity.
2. The protection device for preventing tumor dissemination and tumor metastasis in the laparoscopic surgery according to claim 1, wherein a conduit communicated with the soft bag is provided at the tail area of the soft bag (1), the conduit can be one (3) or multiple (4 or 5), an external port of the conduit can be maintained outside the abdominal cavity through a single or multiple punctures in the abdominal wall, and a laparoscope or other instrument can be put in the soft bag (1) in the abdominal cavity through the external port of the conduit.
3. The protection device for preventing tumor dissemination and tumor metastasis in the laparoscopic surgery according to claim 2, wherein the external port of the conduit can be closed and the soft bag (1) is aerated through the external port of the conduit, inflating the soft bag (1).
4. The protection device for preventing tumor dissemination and tumor metastasis in the laparoscopic surgery according to claim 1, wherein the soft bag (1) is transparent and the instrument is positioned in the soft bag (1) to observe the operation.

ination and tumor metastasis in the laparoscopic surgery according to claim 3, wherein the external port of the conduit can be positioned into an abdominal wall puncture outfit with an one-way gas valve, the instrument is supported by the abdominal wall puncture outfit; and the one-way gas valve is the one-way gas valve opened towards the soft bag in one direction.

5

5. The protection device for preventing tumor dissemination and tumor metastasis in the laparoscopic surgery according to claim 1, 2, 3 or 4, wherein the soft bag (1) is a transparent body, and the instrument which passes through the conduit includes a grasper and a mastax.

10

15

6. The protection device for preventing tumor dissemination and tumor metastasis in the laparoscopic surgery according to claim 1, 2, 3 or 4, wherein the soft bag (1) is an opaque body, and the instrument which passes through the conduit includes a grasper, a mastax and a laparoscope.

20

25

30

35

40

45

50

55

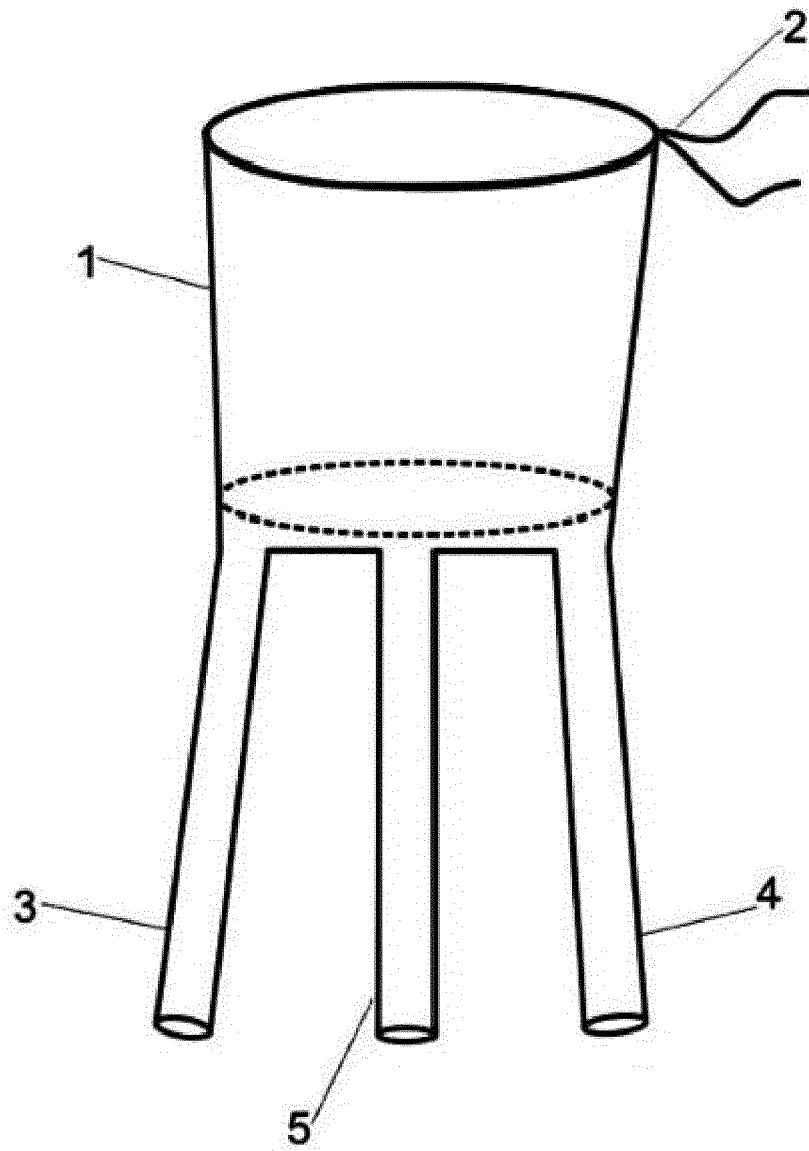


Fig. 1

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2014/000619

A. CLASSIFICATION OF SUBJECT MATTER

A61B 17/3205 (2006.01) i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A61B 17/-

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CNPAT, CNKI, WPI, EPODOC: rope or line, fill, tumour or cancer or specimen or tissue or target, one-way 4w valve, bag, tissue or cancer or tumour or tumor

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	CN 101721239 A (XI'AN JIAOTONG UNIVERSITY), 09 June 2010 (09.06.2010), description, paragraphs 0004, 0020, 0034-0038 and 0053, claims 1, 4 and 10, and figures 1-3, 5 and 9	1-6
Y	US 5618296 A (ENDOMEDIX CORP.), 08 April 1997 (08.04.1997), description, paragraphs 0004, 0020, 0034-0038 and 0053, claims 1, 4 and 10, and figures 1-3, 5 and 9	1-6
Y	CN 203447623 U (CHANG, Liying), 26 February 2014 (26.02.2014), description, paragraphs 0015 and 0017, and figure 1	1-6
Y	CN 101999912 A (WEIHAI WEGO QIQUAN MEDICAL EQUIPMENT CO., LTD.), 06 April 2011 (06.04.2011), description, paragraphs 0002, 0011 and 0021-0026, and figures 1-3 and 5-7	2-4
A	US 2007135780 A1 (PAGEDAS, A.C.), 14 June 2007 (14.06.2007), the whole document	1-6
A	US 2013123797 A1 (LIVNEH, S.), 16 May 2013 (16.05.2013), the whole document	1-6

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	
"E" earlier application or patent but published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

10 December 2014 (10.12.2014)

Date of mailing of the international search report

05 January 2015 (05.01.2015)

Name and mailing address of the ISA/CN:
State Intellectual Property Office of the P. R. China
No. 6, Xitucheng Road, Jimenqiao
Haidian District, Beijing 100088, China
Facsimile No.: (86-10) 62019451

Authorized officer

DONG, Xijian

Telephone No.: (86-10) 62414499

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2014/000619

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	CN 202497201 U (ZHANG, Chunzhi), 24 October 2012 (24.10.2012), the whole document	1-6

Form PCT/ISA/210 (continuation of second sheet) (July 2009)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/CN2014/000619

Patent Documents referred in the Report	Publication Date	Patent Family	Publication Date
CN 101721239 A	09 June 2010	CN 101721239 B	27 July 2011
US 5618296 A	08 April 1997	None	
CN 203447623 U	26 February 2014	None	
CN 101999912 A	06 April 2011	CN 101999912 B	13 March 2013
US 2007135780 A1	14 June 2007	None	
US 2013123797 A1	16 May 2013	None	
CN 202497201 U	24 October 2012	None	

Form PCT/ISA/210 (patent family annex) (July 2009)

专利名称(译)	腹腔镜手术中防止肿瘤扩散和转移的保护装置		
公开(公告)号	EP3123965A1	公开(公告)日	2017-02-01
申请号	EP2014887039	申请日	2014-06-25
[标]申请(专利权)人(译)	凌彬 凌安东		
申请(专利权)人(译)	LING, BIN LING, 庵东		
当前申请(专利权)人(译)	LING, BIN LING, 庵东		
[标]发明人	LING BIN LING ANDONG		
发明人	LING, BIN LING, ANDONG		
IPC分类号	A61B17/3205		
CPC分类号	A61B17/00234 A61B2017/00287 A61B2017/00907		
优先权	201410121274.6 2014-03-28 CN		
其他公开文献	EP3123965A4		
外部链接	Espacenet		

摘要(译)

本发明公开了一种用于在腹腔镜手术中防止肿瘤扩散和肿瘤转移的保护装置，其包括软袋（1），用于在通过腹壁穿刺在腹腔中提供的手术期间容纳切除的肿瘤，和密封线（2）设置在软袋（1）的口周围。将密封线（2）拧紧并结扎，使软袋（1）的口部在盆腔或腹腔内闭合；或者，软袋（1）的闭口可以通过密封线（2）穿过腹壁穿刺而伸出腹腔。仪器可以通过腹腔外的软袋（1）口放入腹腔内的软袋中，也可以通过导管形结构将器械放入腹腔内的软袋中进行破碎操作（3）或用于辅助操作（4）的导管形结构和腹腔镜可以通过用于对准（5）的导管形结构进行观察。该保护装置可作为腹腔镜手术中的辅助装置，在封闭的腹腔内，将肿瘤组织样本放入相对封闭的保护装置中，在腹腔镜观察下破碎取出，避免恶性肿瘤的医源性分散。

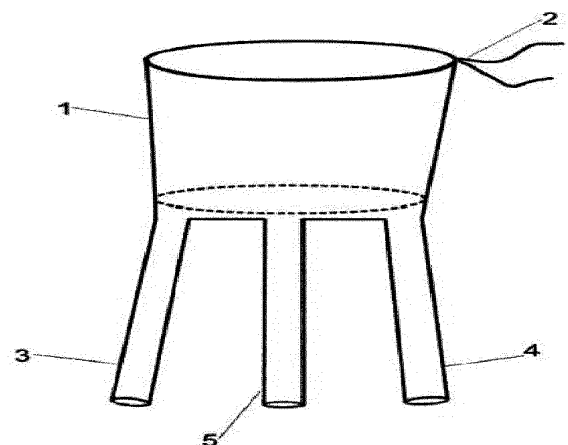


Fig. 1