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(19) **United States**(12) **Patent Application Publication****Patel et al.**(10) **Pub. No.: US 2010/0234862 A1**(43) **Pub. Date: Sep. 16, 2010**(54) **SURGICAL CLAMP AND METHOD OF CLAMPING AN ORGAN**

(60) Provisional application No. 61/005,630, filed on Dec. 6, 2007.

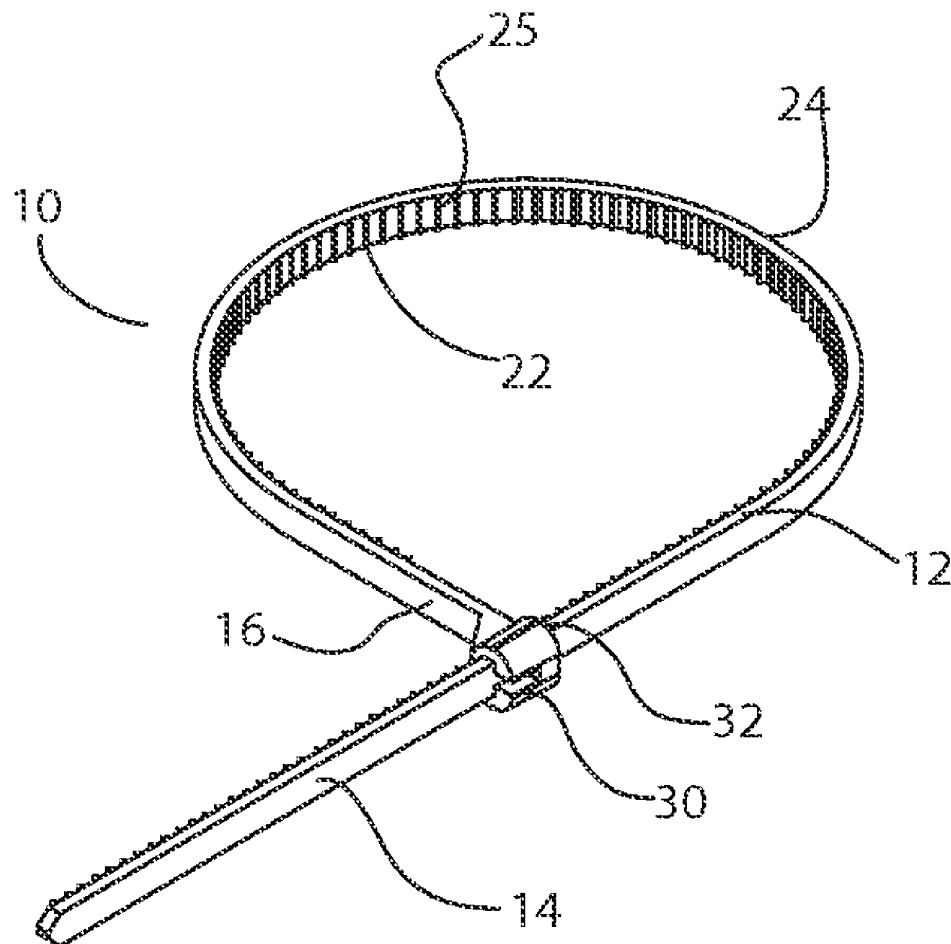
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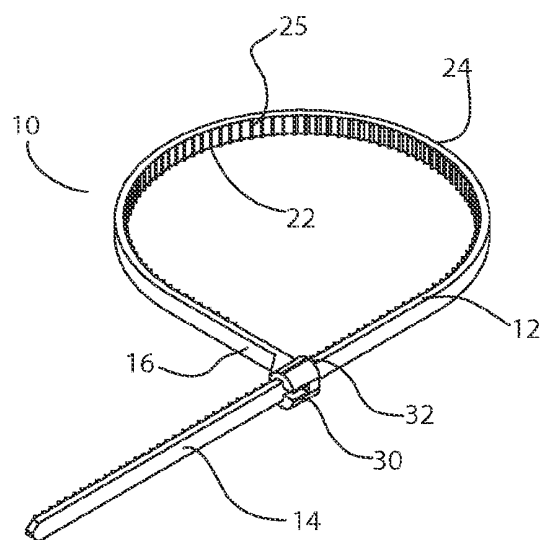
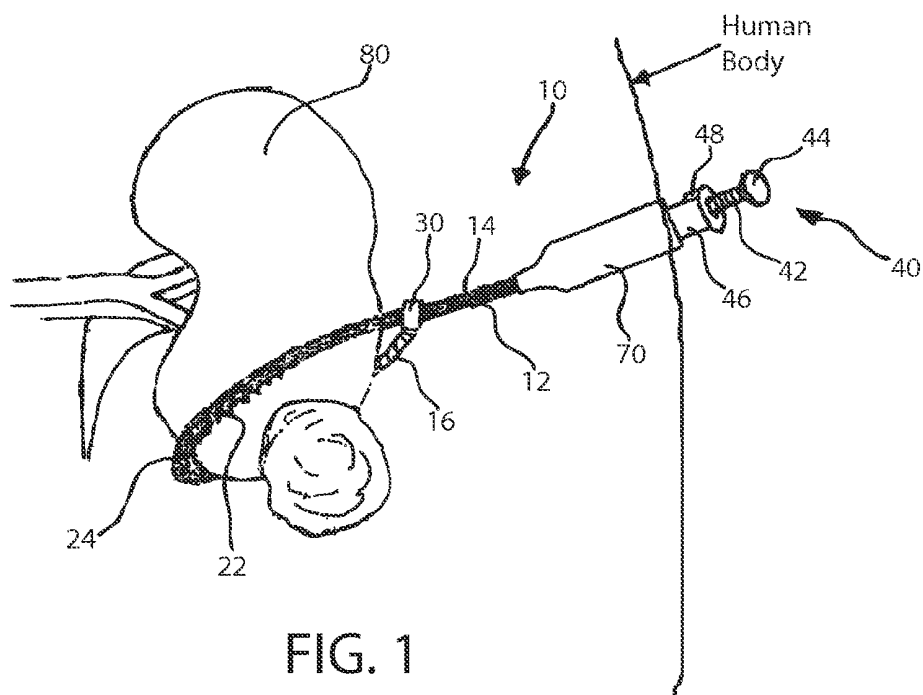
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JACKSONVILLE, FL 32225 (US)**(57) **ABSTRACT**(21) Appl. No.: **12/787,029**(22) Filed: **May 25, 2010****Related U.S. Application Data**

(63) Continuation-in-part of application No. 12/330,508, filed on Dec. 8, 2008.

A surgical clamp is provided that is applied through a laparoscopic port and is used for clamping off a portion of an organ. The surgical clamp comprises an elongated flexible bioabsorbable polymer band laced with a hemostatic agent. The band has a proximal end and a distal end. A bioabsorbable polymer tie secures in place the proximal end of the band to the distal end of the band. A conductive wire snare is provided to cut and cauterize a target.





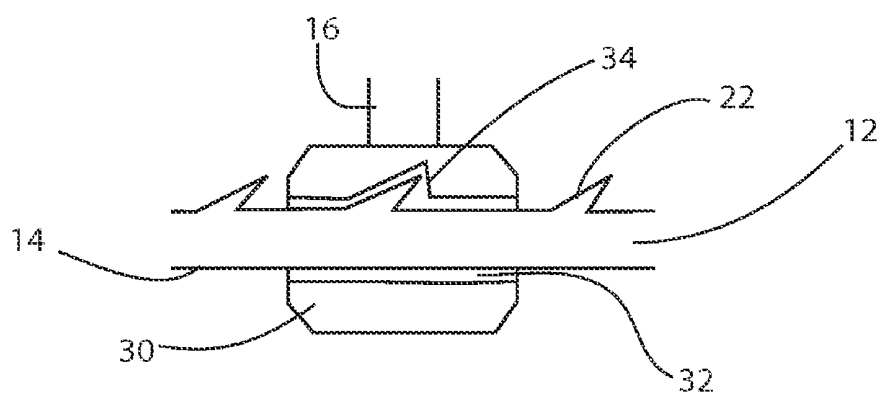


FIG. 3

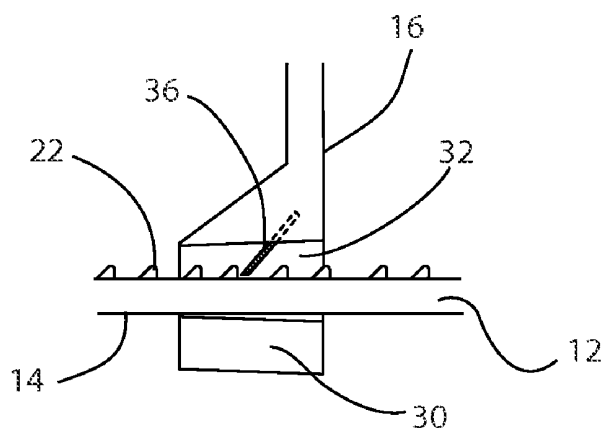
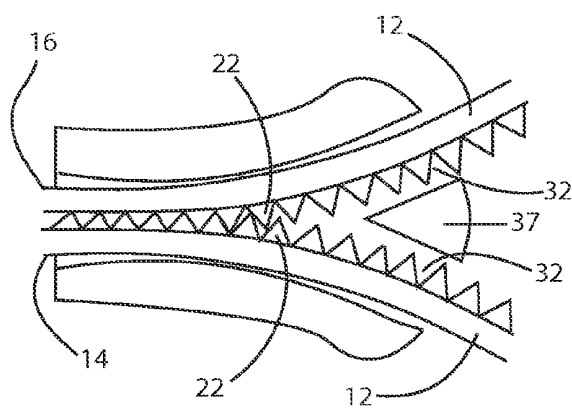
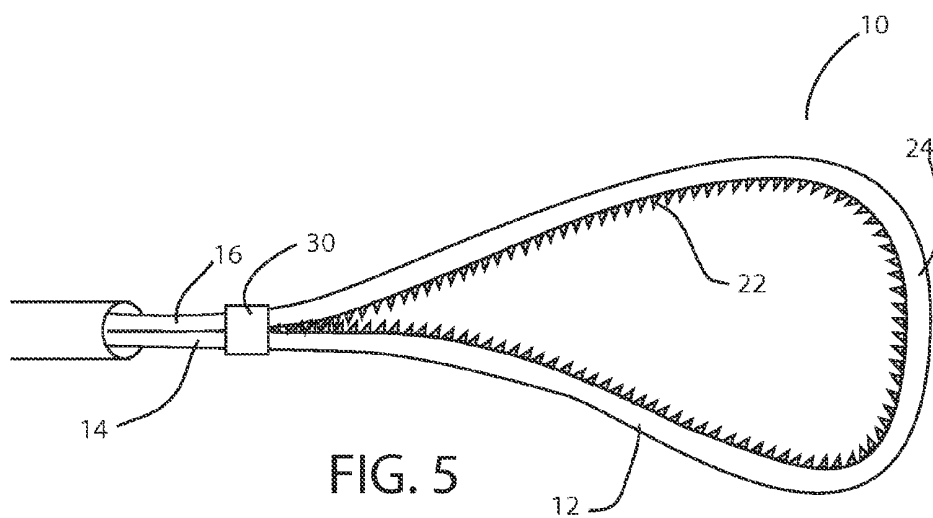


FIG. 4



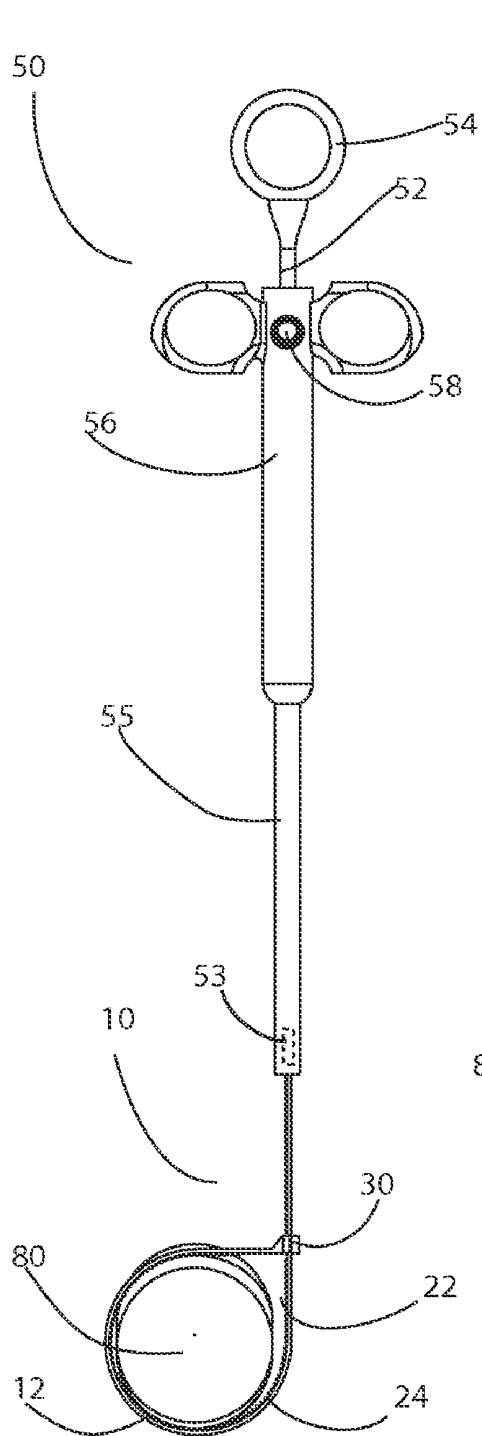


FIGURE 7

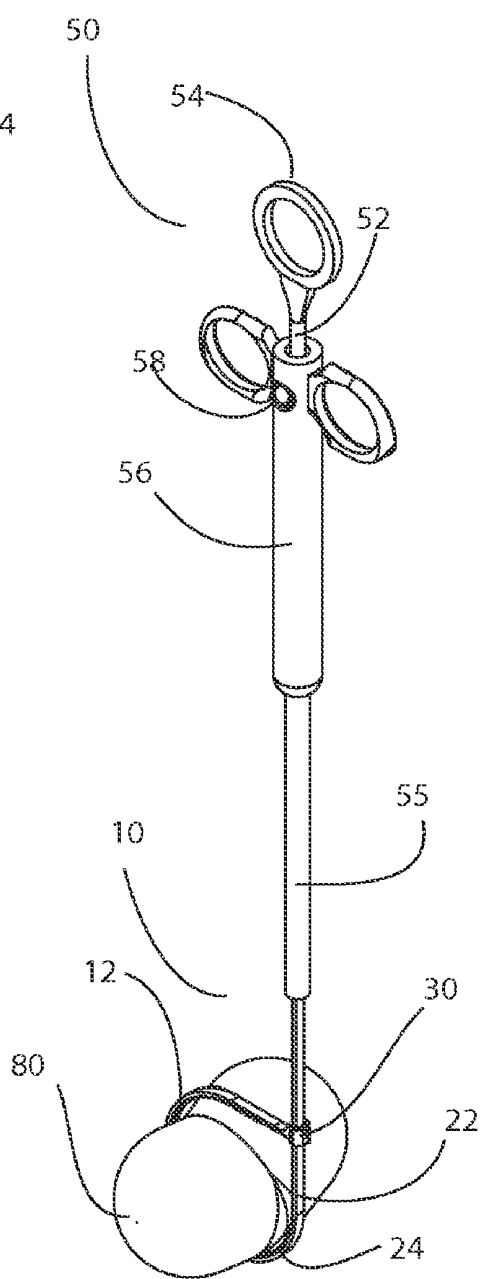


FIGURE 8

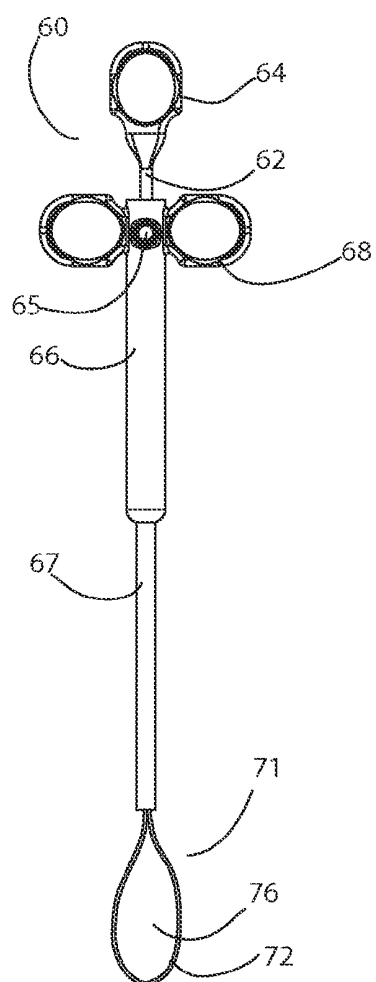


FIGURE 9

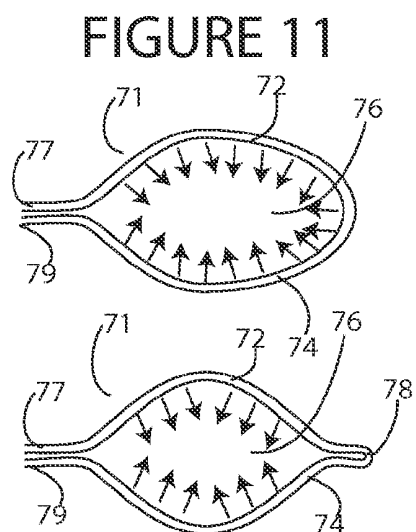


FIGURE 12

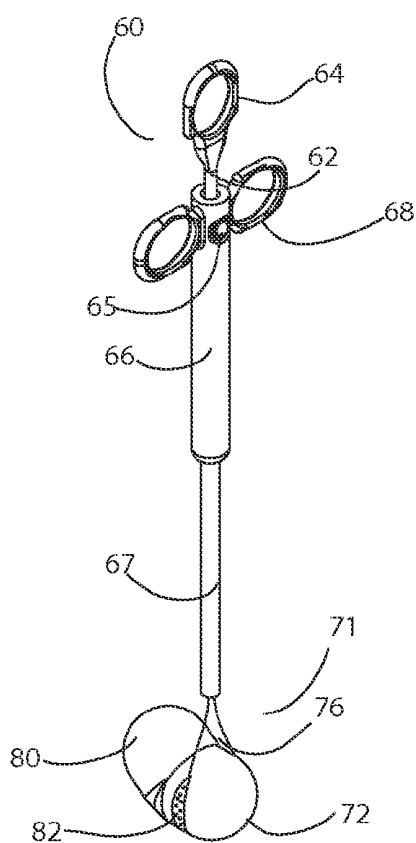


FIGURE 10

SURGICAL CLAMP AND METHOD OF CLAMPING AN ORGAN

RELATED APPLICATIONS

[0001] This application is a continuation in part and claims the benefit of priority of nonprovisional application Ser. No. 12/330,508 filed Monday, Dec. 8, 2008, the entire contents of which are incorporated herein by this reference and made a part hereof. Nonprovisional application Ser. No. 12/330,508 is a nonprovisional of and claims the benefit of priority of U.S. provisional application 61/005,630 filed Dec. 6, 2007, the entire contents of which are incorporated herein by this reference and made a part hereof.

FIELD OF THE INVENTION

[0002] The present invention relates to surgical clamps, and more particularly to laparoscopically applied bioabsorbable surgical clamps.

BACKGROUND OF THE INVENTION

[0003] It is known to use surgical clamps to clamp off portions of tubular bodily vessels or organs, such as blood vessels, bowels, ducts, urethra and the like. Conventional clamps for tubular organ structures include scissor-type clamps. However, scissor-type clamps are not suitable for adapting to organs of different sizes and shapes. Thus, it is known to use loop-type surgical clamps to clamp off portions of non-tubular solid organs, such as the liver, kidney, and the like. Conventional clamps loop-type clamps described in U.S. Pat. No. 5,203,786 (Vernick) and U.S. Pat. No. 5,304,188 (Marogil).

[0004] It is also known to apply a scissor-type clamp through a laparoscopic port, such as trocar, using a laparoscopic applier. In laparoscopic procedures the inside diameter of the trocar limits the size of the clamp and applier that may be used. Laparoscopically applied scissor-type clamps are described in U.S. Pat. No. 5,368,600 (Failla et al.) and U.S. Pat. No. 5,496,333 (Sackier et al.). However, there is a need for a loop-type clamp that is applied through a trocar during laparoscopic surgery.

[0005] In certain situations, it may be desirable to leave the clamp inside the patient's body so that the organ remains clamped off after surgery. It is also desirable to avoid having to perform an additional surgical procedure to remove the clamp. Thus, there is a need for a loop-type clamp that can be left in patient's body, preferably a bioabsorbable material.

SUMMARY OF THE INVENTION

[0006] According to one embodiment, a surgical clamp is provided that is applied through a laparoscopic port and is used for clamping off a portion of an organ. The surgical clamp comprises an elongated flexible bioabsorbable polymer band. The band has a proximal end and a distal end. A bioabsorbable polymer tie secures in place the proximal end of the band to the distal end of the band.

[0007] According to one embodiment, a method of clamping off a portion of an organ in a surgical patient comprises inserting a bioabsorbable band of a surgical clamp through a laparoscopic port. The distal end of the band is coupled to a proximal end of the band with a bioabsorbable tie. The band is elongatedly folded such that a portion of the inner surface of the distal end of the band abuts with a portion of the inner surface of the proximal end of the band forward of the tie. The

forward portion of the band is expanded into a loop after passing through the laparoscopic port. The loop portion of the band is encircled around a portion of the organ. The band is tightened around the organ. The band itself is made of bioabsorbable material, such as Johnson & Johnson's Vicryl®, and the inner lining of the band is made of a surgical procoagulant, such as Johnson & Johnson's Surgicel®, which allows the band to remain in place during the surgical procedure.

[0008] These and other features of this invention are described in, or are apparent from, the following detailed description of various exemplary embodiments of this invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] Exemplary embodiments of this invention will be described with reference to the accompanying figures.

[0010] FIG. 1 is a laparoscopic surgical clamp according to an exemplary embodiment.

[0011] FIGS. 2-4 are laparoscopic surgical clamps according to various exemplary embodiments in which one end of the band is inserted through the tie.

[0012] FIG. 5 is a laparoscopic surgical clamp according to an exemplary embodiment in which both ends of the band are inserted through the tie.

[0013] FIG. 6 is a portion of a laparoscopic surgical clamp according to exemplary embodiments in which both ends of the band are inserted through the tie.

[0014] FIG. 7 is an apparatus with a handle for laparoscopically applying the surgical clamp according to an exemplary embodiment.

[0015] FIG. 8 is perspective view of an apparatus with a handle for laparoscopically applying the surgical clamp according to an exemplary embodiment.

[0016] FIG. 9 is an apparatus with a handle for laparoscopically applying the surgical snare according to an exemplary embodiment.

[0017] FIG. 10 is perspective view of an apparatus with a handle for laparoscopically applying the surgical snare according to an exemplary embodiment.

[0018] FIGS. 11-12 are laparoscopic surgical snares according to various exemplary embodiments.

DETAILED DESCRIPTION OF THE EXEMPLARY EMBODIMENTS

[0019] FIG. 1 is a laparoscopic surgical clamp according to an exemplary embodiment. Referring to FIG. 1, a surgical clamp 10 includes a flexible elongated band 12 having a proximal end 14 and a distal end 16. The band 12 is preferably composed of a material that is biodegradable and bioabsorbable in the body during clinical applications. For example, the band 12 may be composed of a bioabsorbable and biodegradable polymer, such as polyglactin, polydioxanone (PDQ), polycaprolactone (peL), polylactic acid (PLA), polyglycolic acid (PGA), poly(lactic-co-glycolic acid) (PLGA), polyhydroxybutyrate (PHB), or the like.

[0020] A sleeve-like tie 30 secures together the proximal and distal ends 14, 16 of the band 12 to form a loop 24. The loop portion 24 may be encircled around an organ 80 that is to be clamped, such as a kidney, a liver, a uterus, etc. The tie 30 is moveable to constrict the loop portion 24 around the organ 80, but is lockable so that the loop portion 24 can be secured in place around the organ 80. The tie 30 is preferably composed of a material that is biodegradable and bioabsorbable in

the body during clinical applications. For example, the tie 30 may be composed of a bioabsorbable and biodegradable polymer, such as polyglactin, polydioxanone (POD), polycaprolactone (peL), polylactic acid (PLA), polyglycolic acid (PGA), poly(lactic-co-glycolic acid) (PLGA), polyhydroxybutyrate (PHB), or the like.

[0021] In one exemplary embodiment, the clamp 10 comprises a band 12 with a plurality of projections 22 serving as an integrated gear rack. In this embodiment, the sleeve-like tie 30 may house a small ratchet or pawl 36 (FIG. 4), such as a hinged or flexible angled tab. As the band 12 is drawn (i.e., moved by pulling), the tie 30, which contains the ratchet or pawl 36, prevents the band 12 from being withdrawn. The resulting loop formed by the band 12 may be pulled tighter. A cutting tool may later cut off any extra band 12 flush with the tie 30.

[0022] The inner lining of the loop portion 24 of the tie 30 is comprised of a bioabsorbable hemostatic agent, such as the material comprising Johnson & Johnson's Surgicel® products. Surgicel® products are made of a hemostatic agent (blood-clot-inducing material) made of an oxydized cellulose polymer (e.g., polyanhydroglucuronic acid). The hemostatic agent facilitates adhesion and controls post-surgical bleeding. Alternatively a resorbable and absorbable hemostatic agent, based on oxydized cellulose, such as Gelita Health GmbH's Gelitacel® may be utilized.

[0023] The loop portion 24 is foldable so that it may be inserted through a laparoscopic port 70, such as a trocar. Specifically, the loop portion 24 is elongatedly folded such that the inner surface of a portion of the proximal end 14 of the band 12 abuts the inner surface of a portion of the distal end 16 of the band 12. Preferably, the folded loop portion 24 has an overall thickness and width sized such that it may be inserted into an 18 mm trocar port. More preferably, the folded loop portion 24 has an overall thickness and width sized such that it may be inserted into a 12 mm trocar port.

[0024] The band 12 includes a plurality of raised projections 22 that protrude from the one of the inner or outer surfaces 18, 20 of the band 12. When the raised projections 22 are formed on the inner organ contacting surface 18 of the band 12, the raised projects can provide an enhanced gripping surface for holding the clamp 10 around the organ 80 without slipping. The raised projections 22 may also be utilized in conjunction with the tie 30 to secure the clamp 10 in place around the organ 80. For example, the raised projections 22 may comprise bumps, studs, knobs, teeth, ribs, ridges, or the like. The raised projections 22 may be lined with a bioabsorbable hemostatic agent to help keep the clamp 10 in place and to assist in hemostasis after the organ is dissected.

[0025] FIGS. 2-4 illustrate laparoscopic surgical clamps according to various exemplary embodiments in which one end of the band is inserted through the tie. The tie 30 is fixedly attached to the distal end 16 of the band 12. The tie 30 includes an aperture 32 through which the proximal end 14 of the band 12 is inserted to form the loop portion 24. The proximal end 14 of the band 12 is slidable through the aperture 32.

[0026] Raised projections 22 are formed on a surface of the band 12 and are utilized as ratchet teeth to bias against reverse movement of the band 12 through the tie 30. The raised projections 22 are shaped to allow the band 12 to be translated proximally through the aperture 32 to reduce the size of the loop portion 24 and tighten the clamp 10 around the organ 80,

while resisting distal movement of the band 12 that would enlarge the size of the loop portion 24 and loosen the clamp 10.

[0027] The tie 30 may include a means for disengaging the raised projections 22 to permit distal movement of the band 12 through the tie 30, thereby allowing the clamp 10 to be loosened.

[0028] In FIG. 2, the band 12 is translated proximally through the aperture 32 of the tie 30 so that the entire raised projection 22 is extended through the tie 30. If the band 12 is pulled in the distal direction, the distal surface of the raised projection 22 engages against the proximal surface of the tie 30, which prevents distal movement of the band 12 through the aperture 32.

[0029] To permit distal movement of the band 12, the raised projections 22 may be preset to slip when a predetermined amount of distal force is applied by varying the incline of the engaging surfaces of the raised projections 22 and the tie 30.

[0030] In FIG. 3, one or more recesses or grooves 34 are formed into the inner surface of the tie 30 within the aperture 32. As the band 12 is translated proximally through the aperture 32, the raised projections 22 slide into the recesses 34. When the band 12 is pulled in the distal direction, the distal surfaces of the raised projections 22 engage against the proximal surfaces of the recesses 34 to prevent distal movement of the band 12 through the aperture 32.

[0031] To permit distal movement of the band 12, the raised projections 22 may be preset to slip when a predetermined amount of distal force is applied by varying the incline of the engaging surfaces of the raised projections 22 and the recesses 34.

[0032] In FIG. 4, a pawl 36 protrudes from an inner surface of the tie 30 and extends into the aperture 32. The band 12 is translated proximally through the aperture 32 so that the entire raised projection 22 is extended past the pawl 36. When the band 12 is pulled in the distal direction, the distal surface of the raised projection 22 engages against the proximal surface of the pawl 36 to prevent distal movement of the band 12 through the aperture 32.

[0033] To permit distal movement of the band 12, the tie 30 may include a trigger that disengages the pawl 36 from the raised projections 22 or the raised projections 22 may be preset to slip when a predetermined amount of distal force is applied by varying the incline of the engaging surfaces of the raised projections 22 and the pawl 36.

[0034] FIGS. 5-6 illustrate laparoscopic surgical clamps according to exemplary embodiments in which both ends of the band are inserted through the tie.

[0035] Referring to FIG. 5, the tie 30 includes an aperture 32 through which both the proximal and distal ends 14, 16 of the band 12 are inserted to form the loop portion 24.

[0036] Both the distal and proximal ends 14, 16 of the band 12 are slidable through the tie 30. Alternatively, the tie 30 may be fixedly connected at a position along a length one of the distal or proximal ends 14, 16 of the band 12, so that only one of the distal or proximal ends 14, 16 is slidable through the tie 32.

[0037] Raised projections 22 are formed on the inner organ contacting surface 18 of the band 12. When the proximal and distal ends 14, 16 of the band 12 are translated proximally through the aperture 32 to reduce the size of the loop portion 24, the inner surfaces 18 of the proximal and distal ends 14, 16 are placed in abutting engagement with each other. The raised projections 22 on the inner surface 18 of the proximal end 14

interlock with the raised projections **22** on the inner surface **18** of the distal end **16**, thereby locking the proximal and distal ends **14**, **16** of the band **12** together, such as in a zip fastener. The interlocking raised projections **22** have a profile that facilitates interlocking of the raised projections **22** and prevents expansion of the looped portion **24** once the raised projections **22** are engaged.

[0038] Referring to FIG. 6, the tie **30** may optionally include a means for disengaging the raised projections **22** so that the band **12** may be moved distally through the aperture **32** to enlarge the size of the loop portion **24**. For example, the aperture **32** of the tie **30** may be a Y-shaped channel. When the interlocked proximal and distal ends **14**, **16** of the band **12** are moved in the distally through the V-shaped channel **32** of the tie **30**, a V-shaped portion **37** of the tie **30** forces the interlocked raised projections **22** to disengage. The distal and proximal ends **14**, **16** are separated from each other, which expands the looped portion **24**.

[0039] The tie **30** may be lockable by an additional locking means. For example, raised projections **22** may also be formed on the outer surface **20** of the band **12**, which are utilized to lock the tie **30** in place in a similar fashion as described above with respect to FIGS. 2-4.

[0040] FIGS. 7 and 8 illustrate a handle for laparoscopically applying the surgical clamp according to an exemplary embodiment. The surgical clamp **10** includes a handle **50** that is adapted to guide the clamp **10** through a laparoscopic port **70**, such as a trocar, to the organ **80**. The handle **50** is also adapted to tighten or loosen the looped portion **24** of the clamp **10** around the organ **80**.

[0041] The handle **50** includes an elongated shaft **52** having a grip portion **54** at the proximal end. The distal end of the shaft **52** is connected to the band **12** of clamp **10** at one or both of the distal and proximal ends **14**, **16**. For example, where the distal end of the band is inserted through the tie as in FIGS. 2-4.

[0042] The shaft **52** is concentrically disposed within an outer housing **56**. Optionally, a portion of the outer housing **56** may be internally threaded and a portion of the outer surface of the shaft **52** may be threaded. In such an embodiment, rotation of the shaft **52** along its longitudinal axis within the outer housing **56** causes the shaft **52** to translate in the proximal or distal direction through the outer housing **56**. Alternatively, the shaft **52** may translate in the proximal or distal direction through the outer housing **56** via linear sliding motion. In such embodiment, a portion of the outer housing **56** may include a ratchet or pawl mechanism and a portion of the outer surface of the shaft **52** may have teeth-like protrusions, configured to allow withdrawal of the shaft **52**, and resist motion in the opposite direction. In either embodiment, the translation of the shaft **52** exerts a proximal or distal force on the band **12** to move through the tie **30**, thereby tightening or loosening the looped portion **24** around the organ **80**.

[0043] Preferably, the outer housing **56** has a diameter sized such that it may be inserted into an 18 mm trocar port. More preferably, the outer housing **46** has a diameter sized such that it may be inserted into a 12 mm trocar port.

[0044] The shaft **52** and the band **12** are secured together by a latch **53**. The grip portion **56** of the shaft **52** includes a release member **58** for releasing the latch **53**. When the latch **53** is released, the shaft **52** is detached from the band **12**. Thus, the clamp **10** may remain attached to the organ **80** inside the surgical patient's body while the handle **50** is removed. Alter-

natively, to free the band **12** from the shaft **52**, the band **12** may be cut using an integrated cutter or a separate cutting instrument.

[0045] FIGS. 9 and 10 illustrate a handle **60** for laparoscopically applying a cauterizing cutting snare **71** according to an exemplary embodiment. The device includes a handle **60** that is adapted to guide the snare **71** through a laparoscopic port **70**, such as a trocar, to the organ **80**. The handle **60** is also adapted to tighten or loosen the looped portion **24** of the snare **71** around the organ **80**.

[0046] The handle **60** includes an elongated shaft **62** having a grip portion **64** at the proximal end. The distal end of the shaft **62** is connected to the wire strand **72** of snare **71** at one or both of the distal and proximal ends **77**, **79**.

[0047] The shaft **62** is concentrically disposed within an outer housing **66**. Optionally, a portion of the outer housing **66** may be internally threaded and a portion of the outer surface of the shaft **62** may be threaded. In such an embodiment, rotation of the shaft **62** along its longitudinal axis within the outer housing **66** causes the shaft **62** to translate in the proximal or distal direction through the outer housing **66**. Alternatively, the shaft **62** may translate in the proximal or distal direction through the outer housing **66** via linear sliding motion. In such embodiment, a portion of the outer housing **66** may include a ratchet or pawl mechanism and a portion of the outer surface of the shaft **62** may have teeth-like protrusions, configured to allow withdrawal of the shaft **62**, and resist motion in the opposite direction. In either embodiment, the translation of the shaft **62** exerts a proximal or distal force on the wire strand **72** to move through the tie **30**, thereby tightening or loosening the looped portion **24** around the organ **80**.

[0048] Preferably, the outer housing **66** has a diameter sized such that it may be inserted into an 18 mm trocar port. More preferably, the outer housing **46** has a diameter sized such that it may be inserted into a 12 mm trocar port.

[0049] The snare **70** comprises a fine wire strand **72**, which forms a loop **76**. The wire strand **72** is suitable for cutting. The loop **70** is sizable to slide over an organ **80**. As the loop **76** is withdrawn into the sleeve **67**, the strand cuts through the organ **80**. Optionally, the wire strand **72** is electrically conductive. In such an embodiment, the strand **72** may be resistively heated in a controlled manner by supplying a current to the strand **72** to cauterize the cut portion **82** of the organ **80** during cutting. A switch **65** is provided to activate and deactivate resistive heating for cauterization. Electric power may be supplied using a power adapter (not shown) and/or batteries.

[0050] In use, snare **70** may be collapsed and disposed within sheath **67**, which can then be advanced through a body lumen to a suitable target location. Once inside a body lumen, shaft **62** can be moved to eject and expose the snare **70**, whereby loop **76** forms and can be positioned for engaging an organ **80**. When properly oriented, loop **76** can be retracted by moving shaft **62**. As the loop **76** is withdrawn into the sheath **67**, the opening of loop **76** reduces in size, thereby "squeezing" and, ultimately, severing the engaged target. In some embodiments, cautery current (including mono-polar and bipolar current) can be controllably applied so that current flows into strand **72**, which may help cauterize the area adjacent the newly severed target. After use, the device **60** with the snare **70** can be removed from the body.

[0051] Referring now to FIGS. 12 and 13, various snare shapes are illustrated. The embodiment in FIG. 12 features a

generally circular or ellipsoid cross-sectional shape, which distributes cutting pressure evenly. The embodiment in FIG. 13 includes first and second portions 72, 74 separated by a fold 78. In this embodiment pressure is exerted primarily between the first and second portions 72, 74. These and other snare configurations may be used without departing from the scope of the invention.

[0052] While the snare device 60 is shown separate from the band device 40, skilled artisans will appreciate that the snare 71 may be provided on the same device having surgical clamp 10. In such an embodiment separate controls would be provided for the clamp 10 and snare 71.

[0053] Now that exemplary embodiments of the present invention have been shown and described in detail, various modifications and improvements thereon will become readily apparent to those skilled in the art. Accordingly, the spirit and scope of the present invention is to be construed broadly and limited only by the appended claims, and not by the foregoing specification.

What is claimed is:

1. A surgical clamp applied through a laparoscopic port for clamping off a portion of an organ, comprising: an elongated flexible bioabsorbable polymer band having a proximal end and a distal end; and a bioabsorbable polymer tie that secures in place the proximal end of the band to the distal end of the band, said tie comprising a sleeve through which a portion of the elongated flexible bioabsorbable polymer band is drawn, and said tie further comprising an inner surface configured to contact a portion of the organ during clamping, said inner surface comprising a bioabsorbable hemostatic agent.

2. The surgical clamp of claim 1, wherein the bioabsorbable polymer comprises at least one of polyglactin, polydioxanone, polycaprolactone, polylactic acid, polyglycolic acid, poly(lactic-co-glycolic acid), and polyhydroxybutyrate.

3. The surgical clamp of claim 1, further comprising: a detachable handle being operable to insert the band through the laparoscopic port and to tighten the band around the organ.

4. The surgical clamp of claim 3, wherein the handle comprises: an outer housing, at least a portion of the outer housing being internally threaded; and an elongated shaft concentrically disposed with the outer housing, at least a portion of the outer surface of the shaft being threaded, wherein the shaft is rotated along its longitudinal axis in relation to the outer housing to translate a portion of the band through the tie.

5. The surgical clamp of claim 3, further comprising:

a latch securing the handle to the band, and
a release member for detaching the handle from the band.
distal end of the band abuts with a portion of the inner surface of the proximal end of the band forward of the tie;

expanding the forward portion of the band into a loop after passing through the laparoscopic port;

encircling the loop portion of the band around a portion of the organ; and

tightening the band around the organ.

6. The surgical clamp of claim 1, wherein the tie is connected to one of the distal or proximal ends of the band, and the tie includes an aperture through which the other end of the band is inserted.

7. The surgical clamp of claim 1, wherein the tie includes an aperture through which both the proximal and distal ends of the band are inserted.

8. The surgical clamp of claim 1, wherein a plurality of raised projections are formed on a surface of the band.

9. The surgical clamp of claim 8, wherein the raised projections bias against distal movement of the band through the tie.

10. The surgical clamp of claim 8, wherein the raised projections are formed on the inner surface of the band, and where one portion of the inner surface of the band abuts another portion of the inner surface of the band, the raised projections interlock to secure the abutting portions of the band together.

11. The surgical clamp of claim 1, wherein where one portion of the inner surface of the band abuts another portion of the inner surface of the band, the resultant structure of the abutting portions of the band is smaller than about 18 mm in diameter.

12. The surgical clamp of claim 11, wherein the resultant structure of the abutting portions of the band is smaller than about 12 mm in diameter.

13. The surgical clamp of claim 1, further comprising a wire snare forming a loop having an opening, said snare comprising an elongated flexible fine wire strand configured to contact a portion of a target during cutting, said snare configured to cut through a target as the loop opening is reduced in size by withdrawing the snare into a sheath.

14. The surgical clamp of claim 1, further comprising a conductive wire snare forming a loop having an opening, said snare comprising an elongated flexible fine wire strand configured to contact a portion of a target during cutting, said snare configured to cut through a target as the loop opening is reduced in size by withdrawing the snare into a sheath, and a current being supplied to the snare causing resistive heating for cauterizing.

15. A method of clamping off a portion of an organ in a surgical patient, the method comprising:

inserting a bioabsorbable band of a surgical clamp through a laparoscopic port, a distal end of the band being coupled to a proximal end of the band with a bioabsorbable tie, the band being elongatedly folded such that a portion of the inner surface of the distal end of the band abuts with a portion of the inner surface of the proximal end of the band forward of the tie, said bioabsorbable band being laced with a hemostatic agent;

expanding the forward portion of the band into a loop after passing through the laparoscopic port;

encircling the loop portion of the band around a portion of the organ; and

tightening the band around the organ.

16. The method of claim 15, wherein a handle is used to guide the band through the laparoscopic port and to encircle the loop portion around the organ, the method further comprising:

disengaging the handle from the band, thereby leaving the band secured in place around the organ inside the patient's body.

17. The method of claim 16, wherein tightening the band around the organ includes rotating the handle along its longitudinal axis to translate a portion of the band through the tie.

18. The method of claim 16, wherein the handle includes a latch securing the handle to the band and a release member for detaching the handle from the band, and wherein disengaging a handle of the clamp from the band includes depressing the release member to disengage the latch.

19. The method of claim **15**, wherein the band includes a plurality of raised members formed on a surface of the band, and wherein after the band is tightened around the organ, the distal surface of at least one of the raised projections engages against the tie to bias against distal movement of the band.

20. The method of claim **15**, wherein the band includes a plurality of raised projections formed on an inner surface of

the band, and wherein when the band is tightened around the organ, the raised projections on one portion of the inner surface of the band are interlocked with the raised portions on an abutting portion of the inner surface the band to secure the abutting portions of the band together.

* * * * *

专利名称(译)	手术夹和夹紧器官的方法		
公开(公告)号	US20100234862A1	公开(公告)日	2010-09-16
申请号	US12/787029	申请日	2010-05-25
[标]申请(专利权)人(译)	PATEL MANOJ HOENIG DAVID		
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摘要(译)

提供外科夹具，其通过腹腔镜端口施加并用于夹住器官的一部分。手术夹具包括细长的柔性生物可吸收聚合物带，其带有止血剂。该带具有近端和远端。生物可吸收的聚合物系带将带的近端固定到带的远端。提供导电线圈套以切割和烧灼靶。

