



***New Generation of Wound Protection &  
Its Application in Cesarean Section***

- ***ViClean Single Use Wound Protector  
WPB***
- ***US,EU,China Patent Product***

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**Traditional wound protection and contamination prevention.**

02

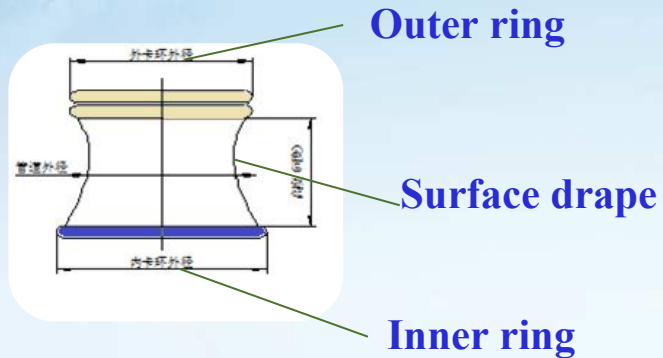
**Wound Protector WPB and its application in Cesarean Section.**

03

**Amniotic Fluid and its harm.**

# Introduction of Wound Protector

## 1. Structure:



*\*Wound protector is a bucket structure consisting of two elastic rings, waterproof membrane channel which has connecting and supporting function.*

## 2. Types of wound protector:





## Main Function



### Main Function :

Improve the prognosis of patients and reduce the risk of SSI.

- ✓ 360° protection. Maintain incision moist.
- ✓ Significantly diminish superficial incisional SSI. Shield the incision from direct contamination of liquid waste, which contains tumor cells and pathogenic microorganisms.
- ✓ 360° Atraumatic Retraction. Flexibly expand incision. Maximize exposure with a minimum incision size.

## Controversy

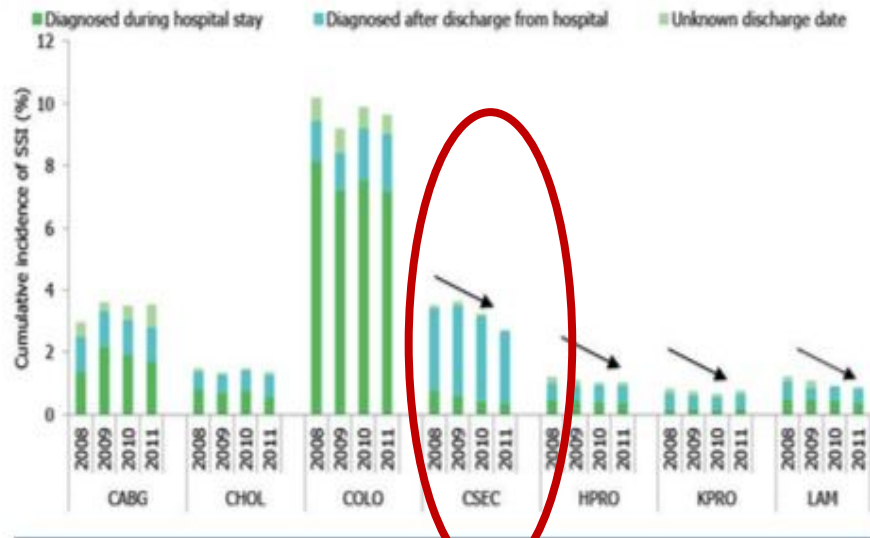
# It looks perfect, but it's controversial.

In the Infection control and hospital epidemiology june 2014 issued in the United States, there is a dispute on whether the wound protector can really reduce the occurrence of SSI. The main reason is that the traditional wound protector cannot completely isolate the fluid waste from the incision.

\*Data source : infection control and hospital epidemiology june 2014,vol.35,no.6 SHEA/IDSA PRACTICE RECOMMENDATION

# SSI in Cesarean Section 1

**Figure 3.1.1. Cumulative Incidence for SSI by year and type of procedure: European Union/European Economic Area countries, 2008–2011**



Data source: ECDC, HAI-Net SSI patient-based data 2008–2011 (<http://ecdc.europa.eu/en/activities/surveillance/Pages/data-access.aspx#sthash.hHYRj9ok.dpuf>, accessed 21 May 2016).

SSI: surgical site infection; CABG: coronary artery bypass graft; CHOL: cholecystectomy; COLO: colon; CSEC: caesarean section; HPRO: hip prosthesis; KPRO: knee prosthesis; LAM: laminectomy.

*From the review of the incidence of SSI in different types of surgery between 2008 and 2011, C-section ranked third.*

*Reference: Global Guidelines for the Prevention of Surgical Site Infection, 2018*



## SSI in Cesarean Section 2

**Table 3.1.2. Summary of SSI rates in different countries**

Country (reference)	SSI rate (%) (95% CI [when provided])	Year*	Measurement used	Study design
USA (5, 15)	0.9 17% decrease in SSI related to the 10 selected procedures (2014 compared to 2008)	2014	Cumulative incidence (episodes per 100 operations)	NHSN data (incidence design)
European Union (6)	9.5 (COLO) 3.5 (CABG) 2.9 (CSEC) 1.4 (CHOL) 1.0 (HPRO) 0.8 (LAM) 0.75 (KPRO)	2010–2011	Cumulative incidence (episodes per 100 operations)	ECDC HAI SSI protocol (21)
England (8)	Large bowel surgery: 8.3 (7.9–8.7) Small bowel surgery: 4.9 (4.3–5.7) Bile duct, liver and pancreatic surgery: 4.9 (4.1–5.9) CHOL: 4.6 (3.1–6.6) KPRO: 0.4 (0.3–0.4)	2008–2013	Incidence density (episodes per 1000 patient-days)	SSI surveillance - incidence design
Australia (9)	2.8	2002–2013	Incidence density (episodes per 1000 patient-days)	Victorian Healthcare Associated Infection Surveillance System
Japan (29, 31)	COLO: 15.0 (6691/44 751) Rectal surgery: 17.8 (3230/18 187)	2008–2010	Cumulative incidence (episodes per 100 operations)	National nosocomial infection surveillance system – incidence design

- *Data from Europe shows that SSI ranks second in the incidence of hospital-acquired infections between 2011 and 2012.*
- *European Centre for Disease Prevention and Control (ECDC) analysed standardized data from 15 EU nations and 20 networks in 2010 and 2011, and found that infection incidence of Cesarean section is 2.9%, and ranks third.*

## Defect of traditional wound protector



- The traditional wound protector can partially prevent the direct contamination from the surgical waste water.
- But it can not avoid the indirect contamination, and can not protect surgeons and operation room environment from waste liquid contamination.

**The clinic urgently needs wound protector which can offer all-round protection.**



## Status of wound protection and contamination prevention

### Intraoperative Wound Protection

--Prevent incision contamination and the possible abdominal incisional endometriosis that may occur.

01

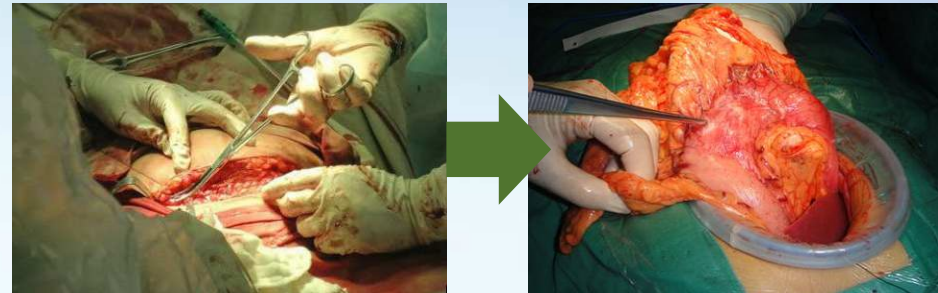
- *Traditional wound protector can not fully protect the incision and causes surgical site infection because there is gap between abdominal wall and its outer ring.*

02

- *It is difficult to protect the surgical wound and operating room environment, and the risks of occupational exposure exist.*

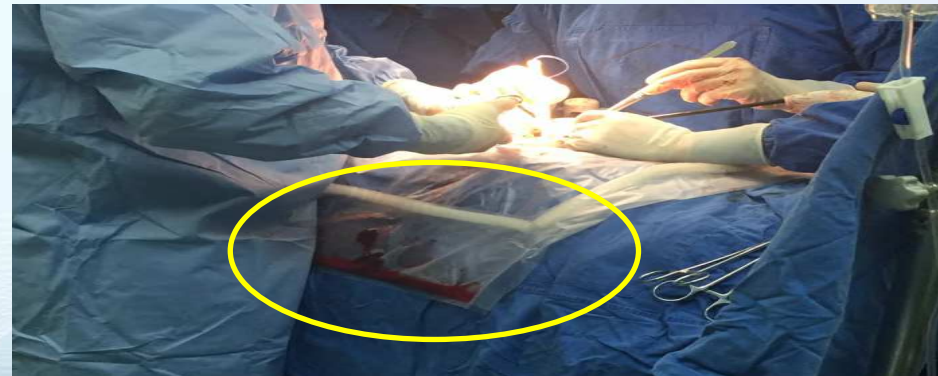
03

- *New generation wound protector offers all-round protection, significantly reduces the contamination of amniotic fluid on abdominal cavity, wound surface and incision.*



*Unprotected*

*Incompletely Protected*



*Completely protected*

## ViClean Single Use Wound Protector--US,EU,China Patent product



**\*Unique 3-ring design.**On the basis of traditional wound protector, use one middle ring to connect upper ring and the waterproof membrane drape which waste collection bag is attached to.

**\*Completely prevent wound from waste fluid contamination,**which bleeds from abdominal cavity. Protect surgeons and operation room environments.

- 1. Effectively collect intraoperative fluid waste from abdominal cavity.**
- 2. Completely avoid Iatrogenic seeding of endometrium and incision infection caused by backflow of liquid waste.**
- 3. Sealed protection of incision.**
- 4. Prevent sterile drape, surgical gown from getting soaked. Keep operation environment clean.**

## Wound Protector WPB's Features and Benefits



One-piece Wound Protector and Waste Collection bag

- ★ **Sealed Protection, No backflow of liquid waste.**
- ★ **In vitro operation of viscera, complete isolation.**
- ★ **Protect patients and surgeons.**
- ★ **Porous supporting strips prevent upper and lower layers of waste collection bag from adhesion.**
- ★ **Quick and convenient postoperative treatment and dismantlement.**



## Clinical Benefits

### Clinical Benefits

#### For surgeons:

- a. Maximum surgical field exposure with a minimum incision size.
- b. Eliminate the need for hand-held retractors, free the hands of the surgeons.
- c. Shorten the operation time, reduce the risk of SSI during C-section.
- d. Integrated protection, collect waste such as amniotic liquid, ensure operation environment clean.
- e. Aid in Cesarean delivery for obese patients by retracting the pannus (or panniculus) away from the field and by reducing the slickness of fat on instruments

#### For patients:

- a. Relieve scar pain, and improve patient satisfaction of wound healing and cosmesis.
- b. Reduce overall pain and discomfort, and the need for analgesics and nausea medication after delivery.
- c. Lower the incidence of uterine atony, reduce OR time by freeing up hands and optimizing surgical assistance, intestinal function recovers faster.

## Models and Applications

Type	Model	Incision Range	Recommended Applications
WPB	0206S	2-6cm	Minimally Invasive Abdominal Surgery
	0509M	5-9cm	
	0914L	9-14cm	Cesarean section
			Open Gastrointestinal Surgery with minimal incision
	1420XL	14-20cm	Open Gastrointestinal Surgery
Pancreaticobiliary Surgery			
1825XXL	18-25cm	Open HPB Surgery Liver resection, Liver Transfer	

## Part 3: What is Amniotic Fluid?



### What is Amniotic Fluid ?

Fetus's Umbrilla

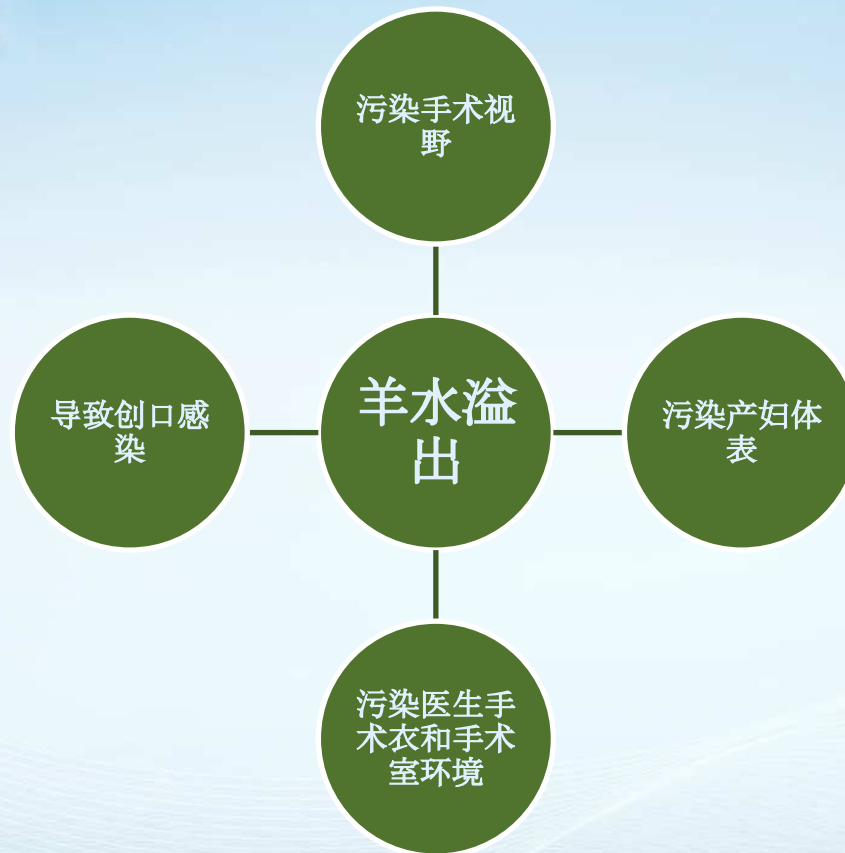
Fetus's Restroom

Fetus's Excreta

- ✓ Amniotic fluid refers to the fluid in the amniotic cavity of the uterus during pregnancy. It is an indispensable composition to maintain the fetal life and development throughout pregnancy.
- ✓ Amniotic fluid is made of 98 percent water, along with a small amount of inorganic salts, organic hormones and exfoliated fetal cells



## Harm of Amniotic Fluid Overflow



## Amniotic Fluid Contamination-- Wound Infection Rate

Amniotic Fluid Contamination



Wound Infection

### Top 10 Factors of SSI after Cesarean Section

Prolonged laor/Stagnation( 19. 3%)

premature rupture of memberane,PROM( 13. 24%)

Amniotic fluid contamination( 11. 39%)

Pregnancy complication( 10. 12%)

Anemia( 8. 82%)

Reoperation (8.16%)

Emergency operation( 6. 77%)

Multiple abortions (5.63%)

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**\*Amniotic Fluid Contamination Ranks the Third.**

Data source: Bao lei, Yuan Jiang-ying, Ying qun-hua, et al. Distribution and drug resistance of pathogens causing nosocomial infections in obstetrics and gynecology [J]. Chinese Journal of Nosocomiology, 2006, 16(6): 717718.

## Amniotic Fluid Contamination

**SSI Incidence Rate of Cesarean Section in the US: 1.84%**

China:4.64%.

15 nations in EU:2.9%.

**Some Developing Nations**

Nigeria:16.2%,Kenya:19%,Tanzania:10.9%,Brasil:23.5%.

**Incidence of hospital-acquired infection in the Europe**

SSI in the C-section ranked third during 2010 and 2011.

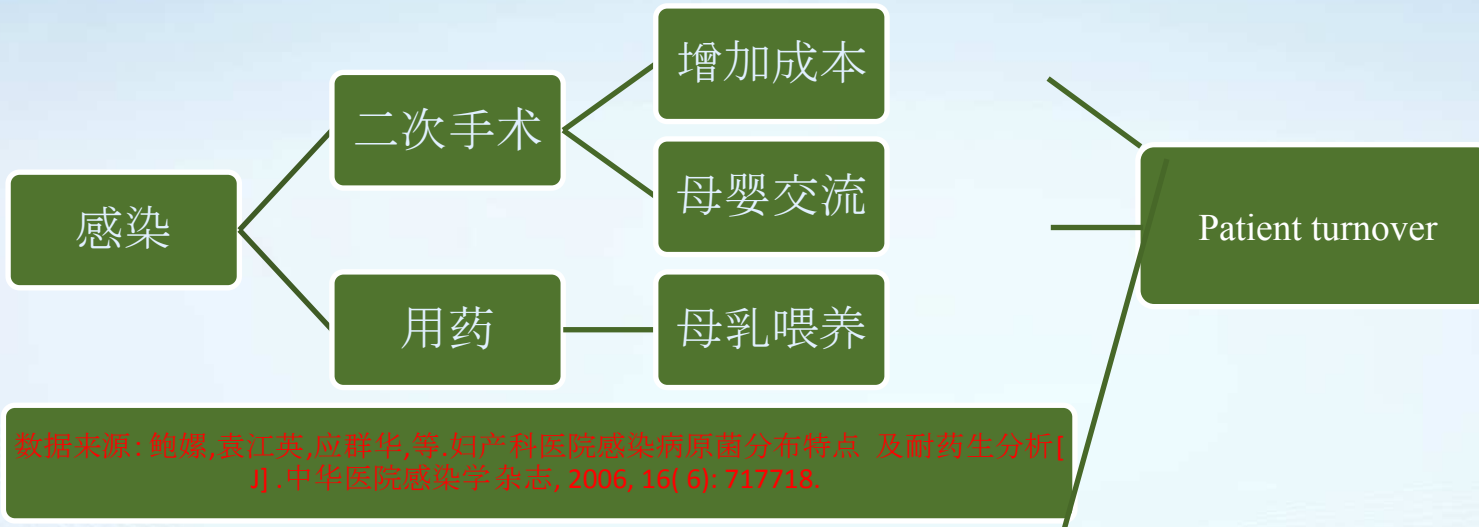
SSI in the C-section ranked second during 2011 and 2012.

\* [1] Data source:Edwards JR,Peterson KD,MuY,et al.National Healthcare Safety Network (NHSN) report:data summary for 2006 through 2008,issued December 2009[J].Am J Infect Control, 2009,37(10):783-805.

[2] Data source:ECDC,HAI-Net SSI patient-based data 2008-2011  
(<http://ecdc.europa.eu/en/activities/surveillance/Pages/data-access.aspx#sthash.hHYRJ9ok.dpuf>.accessed 21 May2016).



## Sequela of Wound Infection



# THANKS FOR WATCHING!

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