Introduction
Laparoscopy is commonly used in gynaecology to gain intra-abdominal access via less invasive incisions. Evidence suggests that laparoscopy provides significant benefits compared to laparotomy. Unlike in conventional open surgery, the surgeon is usually unable to visualise the initial entry into the peritoneal cavity. Most laparoscopic complications occur during the initial entry. There is no consensus as to the safest entry technique, and clinical practice varies between different surgeons and across specialties. Gynaecologists commonly use a closed method of entry, other surgical specialties routinely use open methods of entry.

Abdominal access via less extensive incisions. Evidence suggests that laparoscopy provides significant benefits compared to laparotomy, and risks are associated with laparoscopic entry regardless of the technique used and the particular method of entry. Estimates from one study of 25,764 laparoscopic gynaecological cases suggest that complications related to entry had an incidence of 0.3%. One study analysing trocar-related injuries reported to the FDA between 1993 and 1996 that 81% of deaths resulting from trocar injury were the result of vascular injury and 19% resulted from bowel injury. Researchers have estimated the incidence of major vessel injury at 0.01% to 1.0% of cases. The incidence of major retroperitoneal vascular injuries with a Veress needle entry is reported to be up to 1/1000 (four injuries in 3531 cases). In a study of 11,744 patients undergoing bariatric surgery with direct optical port entry, the incidence of aortic injuries was 4/1000 (1 in 2349).

A review of 75 patients reported to have vascular injury, 25% involved the aorta, and 21% the common iliac artery. Vena cava injuries occurred in 11%, and co-existed with arterial injuries.

Case
A 42-year-old patient with history of chronic pelvic pain and menorrhagia was referred by her GP for consideration of a hysterectomy. She had had abdominal adhesions. She also had significant pelvic pain improvement after GnRH analogues therapy. Examinations findings suggested a rough plaque which was exquisitely tender in the posterior vaginal fornix/POD. It suggested a rough plaque which was exquisitely tender in the posterior vaginal fornix/POD. It

Discussion
Observational studies indicated that the incidence of vascular injury was reduced when open-entry techniques were used compared to closed-entry techniques. It has been hypothesised that, as the closed technique involves blind insertion of trocars, an open technique may be a safer option for primary port insertion.

Theoretical benefits of direct trocar entry over Veress needle entry include immediate recognition of bowel or vascular injuries and immediate recognition of failed entry, as the initial trocar can be used to introduce a laparoscope.

Researchers have reached no clear consensus as to the optimal method of entry into the peritoneal cavity.

The Royal College of Obstetricians and Gynaecologists Green-top guideline in 2009 “Preventing entry-related gynaecological laparoscopic injuries” advised an infraumbilical incision and a sharp Veress needle and for use of pressure, not volume, of insufflated gas to determine when the trocar should be placed within the peritoneal cavity.

One RCT compared an open-entry technique with direct trocar entry, with no vascular injury in either group. Four RCTs compared an open-entry technique versus Veress needle entry, three of these studies reported no vascular injury in either group.

Six RCTs reported difference in rates of vascular injury between direct trocar entry and Veress needle entry but evidence was insufficient to show there was different rates. (Agresta 2004; Angolli 2013; Ertugrul 2015; Imam 2014; Karaca 2014; Prieto-Díaz 2015). Three of these trials reported no events in either arm (Agresta 2004; Angolli 2013; Imam 2014).

A single RCT compared direct vision entry with Veress needle entry (Tinelli 2000). Evidence was insufficient to show whether there was a difference in rates of vascular injury between direct vision entry and Veress needle entry.

Conclusion
Vascular laparoscopic injuries are rare (0.2-0.5/1000), however, they are associated with 6-23% morbidity and mortality. Commonest sites for catastrophic haemorrhage are the right iliac vessels, inferior vena cava and less commonly the abdominal aorta. The injuries commonly occur at entry using a Veress needle or insertion of trocars. Given the high morbidity and mortality rates associated with major vascular injury; its incidence in laparoscopic gynaecological procedures with the most used technique closed-access technique leads us to suggest using the open technique for the entry phase of laparoscopy. Using the open-access method may decrease potential for vascular injuries. A systematic approach to improve outcome for managing these injuries include rapidly recognising the injury, communicating with the team, resuscitation and controlling the haemorrhage according to the location and severity of the injury. Major vascular injuries may require immediate massive haemorrhage protocol activation, multidisciplinary communication, laparotomy, and vascular surgeons urgent help. Timely intervention in such cases could prove to be life saving.

References
[References provided in the text]

CONTACT
NAME: Hashem Elhossamy
EMAIL: hashem.elhossamy@nhs.net
Date 1/5/2019