The Introduction of Thin Catheters for Hysterosalpingography

Thesis

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List of Abbreviations

Abb.	Meaning
ANOVA	Analysis of variance
BJOG	British journal of gynecology
DES	Diethylstilbestrol
EMLA	Eutectic mixture of local anesthetics
HSG	Hysterosalpingograrhy
HyCoSy	Hysterosalpingocontrast sonography
IUI	Intrauterine insemination
MR	Magnetic resonance
NSAIDs	Non steroidal anti-inflammatory drugs
PAD	Pelvic adhesive disease
PID	Pelvic inflammatory disease
RCOG	Royal college of gynecology
RCTs	Randomized controlled trials
SD	Standard deviation
SIN	Salpingitis isthemica nodosum
SIS	Saline infusion sonography
SMD	Standard mean deviation
SPSS	Statistical program for social science
U.S	United states
US	Ultrasound
VAS	Visual analogue scale

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Abstract

Evaluation of the use of thin catheters for Hysterosalpingography and comparing them with the traditional metal cannula in reducing pain experienced during the procedure.

This study was conducted in Manshyet Elbakry hospital, Radiology department from 2011 to 2013 on 60 infertile women in the child bearing period undergoing tubal patency test through HSG for evaluation of pain score during the Introduction of the catheter and during the injection of dye and for efficiency of the new technique in filling the uterine cavity with the dye and studying fallopian tubes.

During the introduction of the catheter, most cases experienced mild discomfort in the study group while they showed moderate to severe pain in the control group. The mean VAS was 12.0±2.2 in the IUI cannula group, 18.1±3.3 in the Pediatric foley's catheter group and 55.3±6.0 in the metal cannula group ($p < 0.0001$). During the dye injection, the mean VAS was 11.7±3.0 in IUI cannula group, 19.9±3.0 in Pediatric foley's catheter group and 68.4±9.1 in the Metal cannula group ($p < 0.0001$).

The new technique was found to be a successful method to visualise the uterine cavity and tubes in all the cases.

Key words : hysterosalpingography , metal cannula , IUI cannula , pediatric foley's catheter , visual analogue scale.

Introduction

Worldwide, 10% of couples trying to conceive suffer from subfertility. One of the major causes of female subfertility is tubal pathology, with a prevalence of around 30%. The diagnostic work-up of subfertile women often includes tubal testing by hysterosalpingography (HSG), an invasive procedure in which an oil- or water-based contrast medium is injected through the cervical canal into the uterine cavity and the fallopian tubes. Subsequently, the uterine cavity and the patency of the fallopian tubes can be visualized **(Broeze et al., 2010).**

Hysterosalpingography is the radiographic evaluation of the uterus and fallopian tubes used predominantly in the evaluation of infertility. It is a valuable tool in the assessment and detection of congenital anomalies, leiomyomas, synechiae, polyps, tubal occlusion, salpingitis isthmica nodosum, hydrosalpinx and peritubal adhesions **(Saunders, 2011).**

Although laparoscopy with chromopertubation associated with hysteroscopy is now the gold standard for assessing the patency of the uterine cavity and fallopian1 tubes, the assessment is still often performed by hysterosalpingography (HSG) at outpatient clinics. The accuracy of HSG is admittedly low, but it is increased when associated with hysterosalpingo contrast sonography (HyCoSy) **(Socolov, 2010).**

In the past HSG has been performed in general anaesthesia using metal instrument to inject the contrast medium. Nowadays it is a well-tolerated out-patient procedure that usually requires no anaesthesia. However the acceptability of this examination has been addressed by many authors who tried to improve it following different strategies. Many different instruments have been used to inject the contrast medium, such

as suction cups, Jarcho cannula, Whitehead cannula or Foley's catheter, Rubin cannula; some of these instruments need to be anchored to a tenaculum applied to the anterior lip of the cervix to be stabilized. More recently reusable metal instruments are being substituted by plastic catheters which in most cases do not need the application of a tenaculum **(Anserini et al., 2008; Mansour et al., 2011).**

Cervical instrumentation, uterine distension with contrast media or peritoneal irritation as a result of contrast spill into the peritoneal cavity often lead to pain or discomfort for the patient. pain scores as assessed by visual analogue score on a scale from 0 to 10 during HSG without analgesia range from 5.9 to 6.8 **(Kafali et al., 2003; De Mello et al., 2006).**

Aim of the Work

Evaluation of the use of thin catheters for Hysterosalpingography and comparing them with the traditional metal cannula in reducing pain experienced during the procedure.

Tubal Factor of Infertility

Physiological Point of View

Oviducts, more commonly called the fallopian tubes, the oviducts vary in length from 8 to 14cm. They are covered by peritoneum, and their lumen is lined by mucous membrane. Each tube is divided into an interstitial portion, isthmus, ampulla, and infundibulum **(Cunningham, 2005).**

The interstitial portion is embedded within the muscular wall of the uterus. The isthmus or the narrow portion of the tube that adjoins the uterus passes gradually into the wider, lateral portion, or ampulla. The infundibulum, or fimberiated extremity, is the funnel shaped opening of the distal end of the fallopian tube **(Cunningham, 2005).**

The Oviduct varies considerably in thickness, the narrowest portion of the isthmus measures from 2 to 3 mm in diameter, and the widest portion of the ampulla measures from 5 to 8 mm. The fimbriated end of the infundibulum opens into the abdominal cavity **(Cunningham, 2005).**

One projection, the fimbria ovarica, which is considerably longer than the other fimbriae, forms a shallow gutter that approaches or reaches the ovary.

The tubal musculature undergoes rhythmic contractions constantly, the rate of which varies with the hormonal changes of the ovarian cycle. The greatest frequency and intensity of contractions is reached during transport of ova **(Cunningham, 2005).**

The oviducts are lined by a single layer of columnar cells, some of them are ciliated and others are secretory tubal mucosa, there are cyclical

histological changes similar to those of the endometrium, but mush less striking. The mucosa is arranged in longitudinal folds that are more complex toward the fimbriated end. On cross sections through the uterine portion, four simple folds are found that form a figure that resembles a Maltese cross **(Cunningham, 2005).**

The isthmus has a more complex pattern. In the ampulla, the lumen is occupied almost completely by arborescent mucosa, which consists of very complicated folds. The current produced by the tubal cilia is such that the direction of flow is toward the uterine cavity. Tubal peristalsis is believed to be an extraordinarily important factor in transport of the ovum. The tubes are supplied richly with elastic tissue, blood vessels, and lymphatic. Sympathetic innervations of tubes are extensive, in contrast to their parasympathetic innervations. Diverticula may extend occasionally from the lumen of the tube for a variable distance into the muscular wall and reach almost to the serosa. These diverticula may play a role in the development of ectopic pregnancy **(Cunningham, 2005).**

The musculature of the fallopian hypertrophy during pregnancy (Fig.1). The epithelium of the tubal mucosa, however, becomes some what flattened. Decidual cells may develop in the stroma of the endosalpinx, but a continuous decidual membrane is not formed **(Cunningham, 2005).**

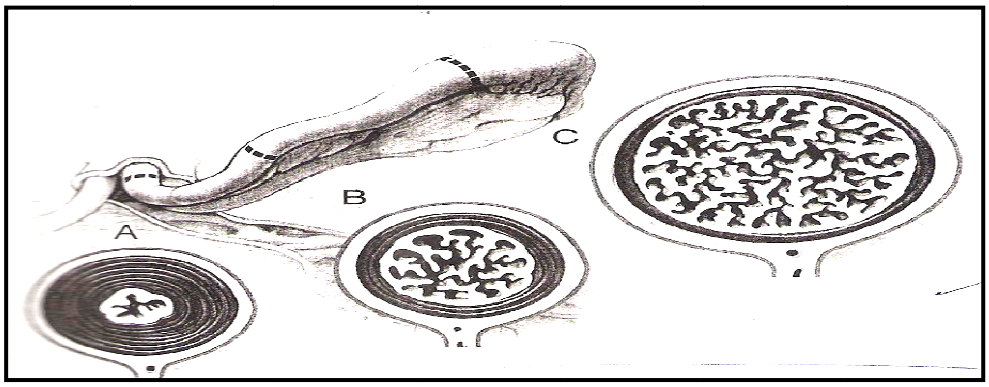

Figure (1): Tubal musculature **(Cunningham, 2005).**

Infertility

Infertility is generally defined as 1 year of unprotected intercourse without conception **(Speroff, 2005).**

Secondary infertility if a previous conception had occurred regardless of the outcome **(Akande et al., 2002).**

Usually either 1 or 2 years the cumulative spontaneous pregnancy rate for a couple during a 2 years period is approximately 57 % after 3 months. 72 % after 6 months , 85% after 1 year and 93% after 2 years accordingly, only 7 % of couples will conceive in the second year , which justifies starting investigations for infertility after 1 year **(RCOG, 2004).**

However if the physician or the patient has a reason to suspect impaired fertility, the process should be started sooner furthermore if the female partner is approaching 35 years of age, the investigations should not be delayed given the rapid, decline of female fecundity with the age **(RCOG, 2004).**

It has been estimated that infertility affects between 9% and 14% of couples of whom 70 % suffer from primary infertility ie have no previous conception, and 30% secondary infertility i.e have achieved a previous pregnancy (regardless of the outcome of that pregnancy) **(RCOG, 2004).**

❖ Risk Factors

In the U.S., about 10% of women ages 15 - 44 or about 6.1 million women have problems getting pregnant or carrying a baby to term.