

VAGINAL AND ENDOCERVICAL BACTERIAL CONTAMINATION IN IUD USERS

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Over the last few years while inert and medicated intrauterine devices became increasingly widespread, a pathology has developed which is related to the use of these contraceptive devices, as reported by many Authors (^{1, 2, 3, 4, 5, 6, 7, 8, 9}).

Everybody agrees that any IUD introduced and kept in the uterus can be a risk factor. Apart from the risk of variation of the menstrual flux, pelvic algias, miscarriage with IUD *in situ*, ectopic pregnancy, expulsion and perforation, bacterial contamination of the uterine cavity is a significant risk.

Mishell *et al.* (¹⁰) claimed that although bacterial contamination occurs whenever the device is inserted into the uterine cavity, the host's defences can suppress most of these microorganisms within 24 hours and after one month the endometrial cultures are negative (³). Therefore, according to these Authors (^{3, 10}), IUD do not cause increased incidence of acute adnexal phlogosis. Tietze (¹¹) did not find an increased frequency of pelvic phlogosis in IUD users even when their anamnesis was positive for previous genital infections.

Conversely, further epidemiological studies (^{1, 2, 3}) have always challenged these claims concerning both pelvic phlogosis and adnexites. Faulkner *et al.* (²) found a 5-fold increased risk factor in IUD users.

IUD are also held responsible for an increased incidence of schizomycetes-induced genital infections (^{12, 13}).

In the light of these reports we thought it useful to carry out a study on IUD users' vaginal and endocervical flora.

MATERIAL AND METHODS

Our study concerns 61 women between 20 and 44 years of age, using IUD since 6 to 24 months.

Samples for the vaginal microbiological test were taken by means of calcium alginate tampon; the tampon was soaked in a transport medium (transport Stuart Medium - Difco).

SUMMARY

The use of intrauterine devices is clearly related to a new aspect of infective pathology: bacterial contamination of the uterine cavity and its repercussions throughout the genital apparatus. Therefore the Authors decided to carry out a study of the vaginal and endocervical flora of 61 IUD users. This study has shown that pathogenic germs are present to a significant extent (82.3%) even when no clinical symptoms can be detected. The Group B streptococcus was detected in a high number of cases (10.6%) in the vaginal (9.8%) or endocervical tampon (11.5%).

Table 1. — *Anamnestic characteristics, objective findings and anagraphical data of the examined sample.*

Age: (years); range (20-44); mean (32.3).
Parity: nulliparae (7); primiparae (16); pluri- parae (38).
Type of IUD: copper T (17); MLCu 250 (40); Gravigard (3); Minigravigard (1).
Period of use of IUD: range (6-24 months); mean (15.9).
Positive anamnesis for genital phlogosis: negative (45); leukorrhea (2); vaginitis (9); er. cervi- citis (5).
Symptomatology after insertion of IUD: nega- tive (50); aspecific vagin. (10); cervicitis (1).
Characteristics of the portio: epithelized portio (55); disepithelized portio (3); cervicitis (3).

The following culture medium were used for isolating the microorganisms:

— blood Agar: a culture medium allowing any microorganism to grow;

— mannitol salt Agar: a selective medium for staphylococci;

— MacConkey Agar: a selective medium for Gram-negative bacteria (notably Enterobacteria-Pseudomonas);

— Sabouraus Agar+gentamycine: a selective medium for mycetes.

The microorganisms which grew in these media were isolated either by direct and staining examination by optical microscope or by biochemical or fermentative tests according to traditional bacteriological techniques.

In detail, for Enterobacteria we used the 20E Api gallery (Ayerst) and for isolating group B streptococci the Api Streep gallery of biochemical reactions (Ayerst).

We noted as positive only those samples which produced growth of several microorganisms in media like blood Agar or selective media. Neither special enrichment techniques (Baker's liquid medium) nor selective media (MPC Agar or CMA blood Agar) were used for group B streptococci.

RESULTS

Table 1 shows age, parity, type of IUD, period of use, genital infections caught before insertion of IUD, side effects reported after the insertion and characteristic of our patients' portio.

IUD were of the MLCu 250 type in 40 cases, Copper T type in 17, Gravigard in 3 and Minigravigard in one case only. 9 women reported suffering from vaginitis prior to IUD insertion; 5 reported previous erosive cervicitis, 2 leukorrhea; in 44 cases the anamnesis was negative for previous genital phlogosis. Gynecological examination showed erosive cervicitis in 3 women and disepithelized portio without subjective symptoms in 3 other patients. Only in 10 cases did we find aspecific vaginitis which had set on after insertion of the IUD.

These clinical data seem to disagree with the results from the microbiological tests which were carried out on vaginal and endocervical samples taken from these women. Altogether, 81 microorganisms were isolated in the vaginal tampon, of which 37 non pathogenic and 44 pathogenic, as well as 65 microorganisms in the endocervical tampon, of which 24 were non pathogenic and 41 pathogenic (tabs. 2-3; figs. 1, 2).

Our study shows that Staphylococci, Streptococci and Coliform bacteria make up the main share of the vaginal ecosystem. The Staphylococcus epidermidis was isolated in 34.4% of vaginal and 21.3% of endocervical tampons; the Lactobacillus in 13.1% of both vaginal and endocervical tampons; the Staphylococcus albus in 9.8% and 3.3% of tampons, respectively, and finally, the Staphylococcus aureum was isolated in 3.3% of va-

Table 2. — *Number and percentages of microorganisms isolated in vaginal and endocervical tampons (pathogenic and non pathogenic microorganisms).*

No. of microorganisms isolated	Non pathogenic	Pathogenic	Total
Vaginal tamp. (No. 61)	37 (45.6%)	44 (54.4%)	81
Endocervical tamp. (No. 61)	24 (37%)	41 (63%)	65

Table 3. — Vaginal and endocervical microbiologic flora.

Type of microorganism	Vaginal tamp.		Endocervical tamp.		Ø
	No. ass.	%	No. ass.	%	No. ass.
Staphylococcus epid.	21	34.4	13	21.3	8
Staphylococcus albus	6	9.8	2	3.3	4
Staphylococcus aureum	2	3.3	1	1.6	1
Lactobacillus	8	13.1	8	13.1	—
Enterococcus	13	21.31	13	21.3	—
Streptococcus gr. B	6	9.8	7	11.5	—1
Candida	4	6.5	4	6.5	—
Klebsiella pn.	1	1.6	1	1.6	—
Escherichia coli	13	21.3	11	18.0	2
Corynebacterium	4	6.5	4	6.5	—
Acynetobacter sp.	2	3.3	1	1.6	1
Pseudomonas sp.	1	1.6	—	—	1
Negative	10	16.4	18	29.5	—8
Positive	51	83.6	43	70.5	7

ginal and 1.6% of endocervical tampons. Enterococcus and Escherichia Coli were isolated in a high number of cases both in vaginal (21.3% both) and endocervical tampons (21.3% and 18.03%, respectively). The group B Streptococcus had a very high incidence: 9.8% in vaginal and 11.5% in endocervical tampons. Candidas were found in 6.5% of vaginal and 6.4% of endocervical tampons. Corynebacteria were found in 6.1% of both vaginal and endocervical tampons. Finally, Enterobacteria (other than Escherichia Coli) were isolated in approximately 7.0% of tampons and Pseudomonas in 1.6% of vaginal tampons. 10 vaginal (16.4%) and 18 endocervical tampons (29.5%) were negative.

DISCUSSION

Our microbiological study has shown that pathogenic microorganisms have a significant incidence (82.3%) even when

no clinical symptoms can be detected. Only in 10 cases did we detect aspecific vaginites which had set on after insertion of IUD.

Recently some Authors (³) came to the conclusion that IUD increase the risk for salpingitis to a statistically significant extent but other factors too play an important role from an epidemiological point of view. They include race, age, socio-economic conditions, living habits, number of sexual partners, type of IUD, period of use and previous genital phlogoses.

On this subject a comparative study was carried out in Denmark, Finland and Sweden concerning the use of two types of copper IUD (Nova T, Tcu 200). It showed that IUD removals due to infections are far more frequent in the under 25. Conversely, no statistically significant difference was found concerning parity (¹⁴).

Ronald *et al.* (¹⁵) in England estimated that 1/250 IUD users per year was affected by phlogosis, this frequency ranging depending on the type of IUD — from 1/104 for Gravigard and Copper T to 1/385 for Lippes B.

These reports suggest a causal link between phlogoses of the genital tract in IUD users and bacterial contamination of the device by pathogens (¹⁶). On this subject we are already carrying out an epidemiological study to detect and single out various factors of risk for genital phlogosis in relation to the bacteriological positivity of vaginal and endocervical tampons of IUD users.

Moreover, our results show that the microbiological findings on vaginal and endocervical tampons agree almost always. The thread coming out of the cervical canal can therefore be assumed to help microorganisms to spread from the vaginal to the endocervical environment where they find physicochemical conditions apt to promote their development, thus becoming an important factor of risk for utero-tubal and pelvic phlogosis. Our theory concerning the presence of patho-

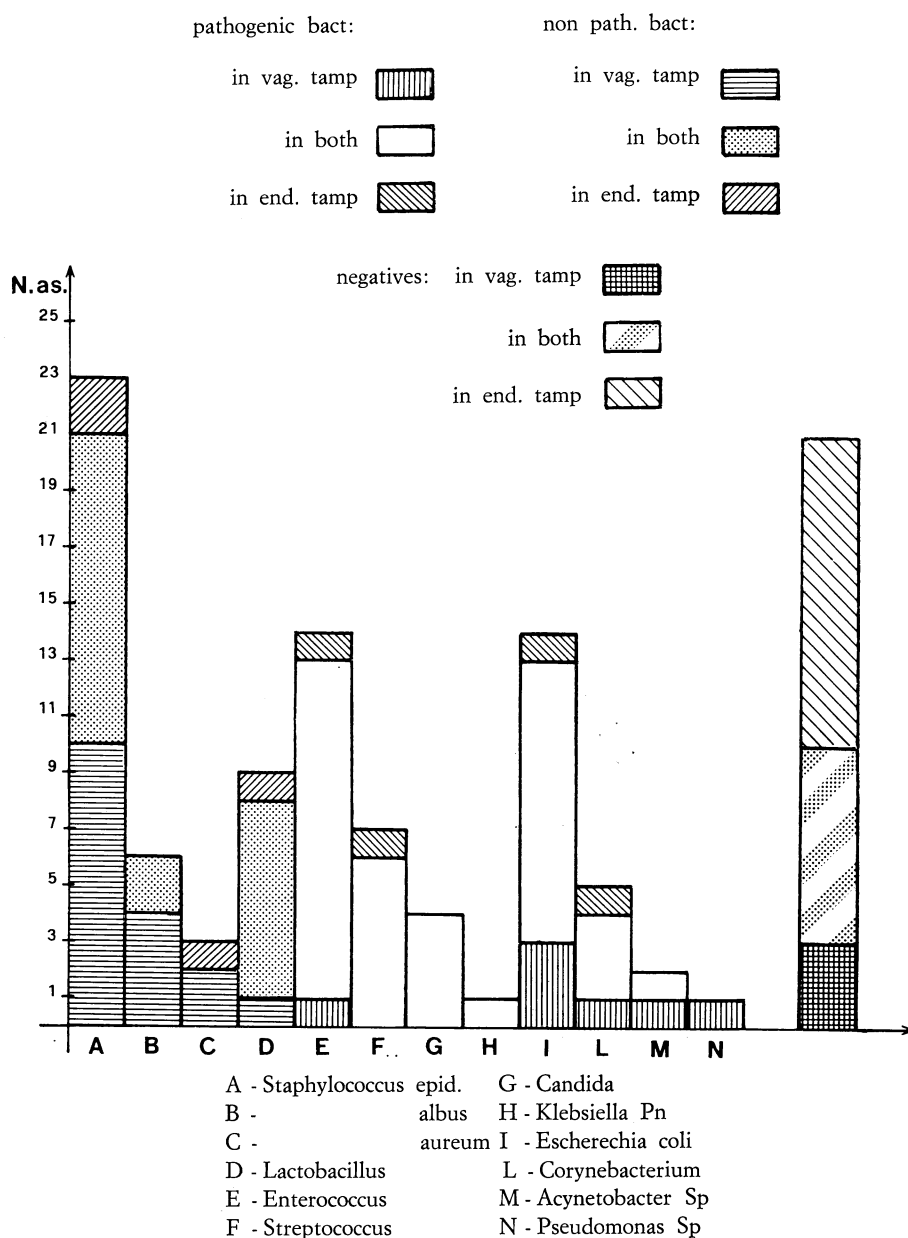


Fig. 1.

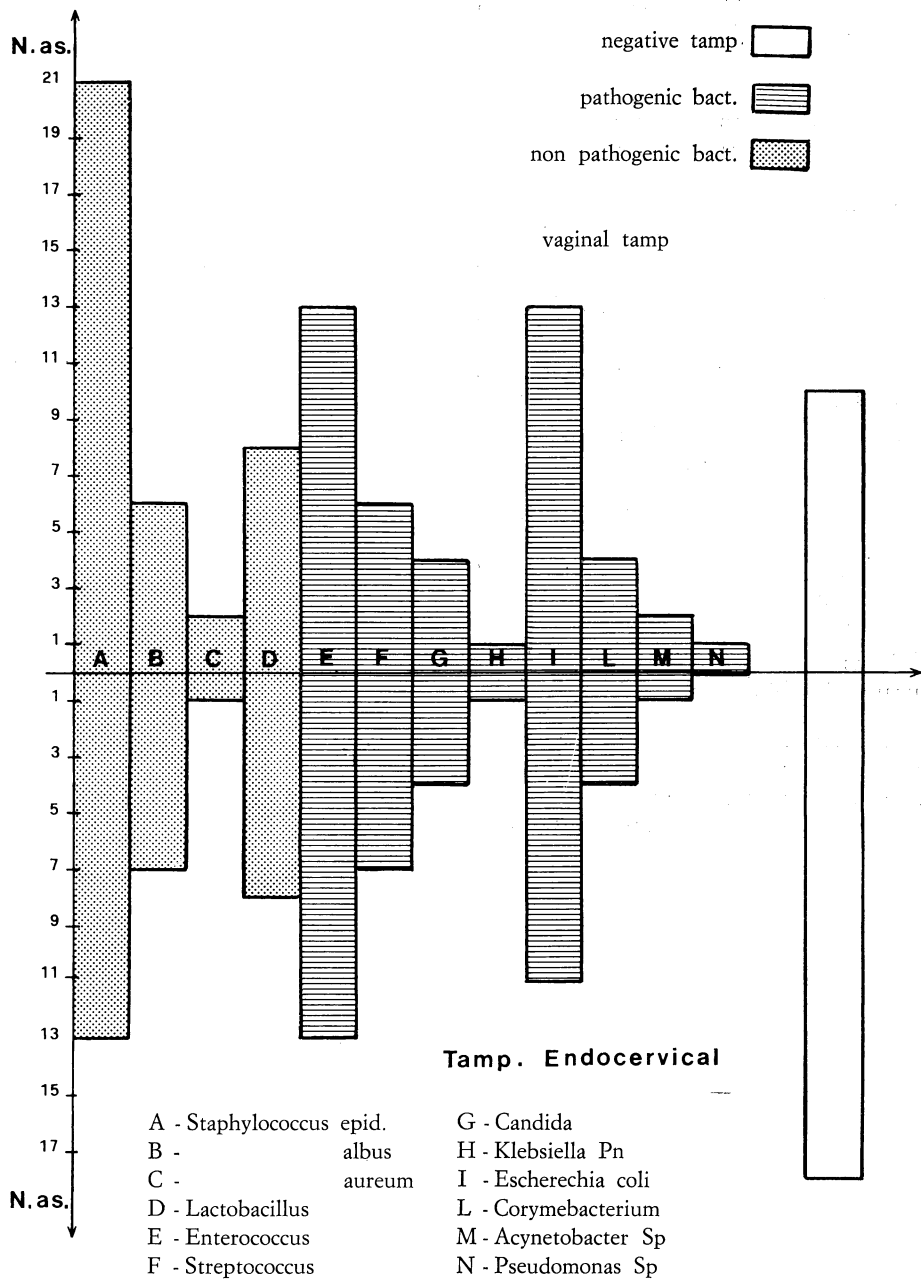


Fig. 2.

genic germs in the endocervix partly contrasts with what Mishell *et al.* ⁽¹⁰⁾ claim about the ability of the uterus to suppress bacteria within 48 hours from insertion of an IUD.

Group B Streptococci were isolated in a high number of cases (approx. 9.8% of vaginal and 11.5% of endocervical tampons). We used neither target nor selective techniques to isolate these microorganisms: we can therefore logically assume that, if used, these techniques would increase the frequency of isolation of these bacteria.

This notwithstanding the incidence we observed is approximately twice as high as that found by Visconti *et al.* ⁽¹⁷⁾ who used target and selective techniques in their study.

In conclusion, in the light of the results of our microbiological study on IUD users, the high incidence of vaginal and endocervical tampons positive for pathogenic and non pathogenic microorganisms highlights in our opinion the need for accurate microbiological monitoring of the vaginal and endocervical bacterial flora to obtain further information on the possible relationship between these microorganisms and the incidence of pelvic phlogosis in IUD users ^(18, 19, 20, 21, 22, 23).

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