

Short Communication

Menstrual cup as an alternative to sanitary pads for preventing recurrence of tinea cruris

Dermatophytosis or tinea infection is on the rise in Indian population. Over the last 3-4 decades there has been an alarming rise in the incidence of chronic and recurrent superficial fungal infections, more so in developing countries like India due to hot and humid climate, misuse of topical steroids, poverty, overcrowding, changing sense of fashion and leaning more towards tight fitting or denim clothes and ever increasing mutations and treatment resistance in fungal species. The current prevalence of superficial mycotic infections worldwide has been estimated to be 20-25% as per World health organisation.¹ More than 60.4% of the cases are reported to be recurrent or chronic dermatophytosis.²

In India, most common species causing dermatophytosis are *Trichophyton rubrum*, followed by *Trichophyton mentagrophytes* and *Microsporum gypseum*.³

Trichophyton can survive off the human body as spores in the environment until it finds a warm, moist area where it is ready to colonise again. Invasion of epidermis starts with attaching anthroconidia to keratinocytes, anthroconidia then germinates to produce hyphae and multiply in multiple directions radially to spread and invade the areas.⁴

Millions of women across globe rely on sanitary pads or panty liners for feminine hygiene protection. Menstrual pads were invented in 1896 and became commercially available in United States in 1921. Most of the sanitary pads have similar design and are made of three layers-

with top layer consisting of fluid permeable surface, an absorbent core and impermeable back cover with adhesive layered on its back. The top layer which comes in immediate contact with the body surface is made of perforated non-woven fabric of polypropylene or polyethylene fabric which is layered on the top surface with a petrolatum based emollient to provide comfort and skin moisturization benefits.⁵

Due to occlusion the impervious back layer of sanitary pads can cause increase in skin temperature and skin surface moisture of the vulval area. It was observed that the mean temperature of the labia majora was 1.5°C higher than the females without the panty liners.

It has also been observed that moistened pads raise the skin surface moisture and relative humidity of the microenvironment present between the moist pad and the skin surface.⁶ **Figure 1** shows the design of a standard sanitary pad.

The penetration of fungal elements of *trichophyton mentagrophytes* is much faster with increased humidity and temperature. The minimum time for penetration of *Trichophyton rubrum* and *mentagrophytes* was measured to be 1.5 days and 1 day respectively at 100% humidity while it increased to 4 days and 1.5 days respectively when humidity was decreased to 95%.⁷ Moreover, the chances of penetration of fungal elements into the skin becomes even faster and easier when there are micro traumas present, which might occur with long duration of sanity pad usage.

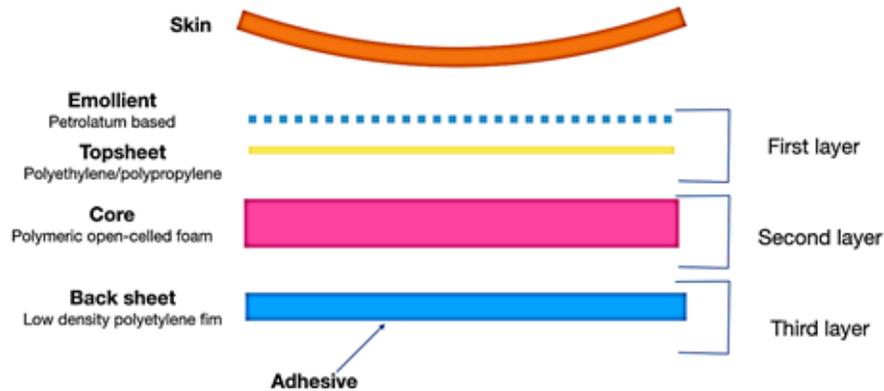


Figure 1 Design of a standard sanitary pad.

There are cases of *Tinea cruris* in young productive females who while being on oral antifungals present with aggravated tinea lesions post menstrually. The increased temperature, humidity and occlusion caused by the sanitary pads can perpetuate fungal infection. The author proposes to use alternative method of feminine hygiene like tampons or menstrual cups. Menstrual cups are made of medical grade works like tampons, they are inserted into the vagina and blood is collected in the receptacle, a cup can hold upto 10-38 ml of blood. There are two types of cups - vaginal and cervical cups. Vaginal cups are generally bell shaped and placed inside the vagina whereas cervical cups are shaped in form of diaphragm and are placed at high end of vagina. Studies have shown that menstrual cups are safer to use with low chances of leakage and budget friendly as one cup can last upto 10 years.

The author advised the reproductive aged females suffering from chronic *tinea cruris* to use menstrual cups instead of sanitary pads, which led to significant reduction in recurrence of dermatophytosis in these patients.

The use of menstrual cup is also environment friendly as they are disposable and are made of medical grade silicone, rubber, latex or elastomer which are biodegradable. Around 12.3

billion sanitary pads, amounting to 113,000 tons of waste reaches India's landfills every year. After being disposed off, each menstrual pad takes more than 500 years to degrade.

However, there are some short comings to use of menstrual cup - learning curve to insertion and removal of menstrual cup. The initial usage of menstrual cup requires time, practice and training. Some longitudinal studies have showed a learning curve of 2-5 months.⁸

Conclusion

The use of alternative method of feminine hygiene products like menstrual cup instead of sanitary pads can prevent recurrence of *tinea cruris* in young reproductive women.

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