What wart?
2nd Edition

Anogenital warts:
a pictorial guide to diagnosis and management

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www.chestersexualhealth.co.uk
Introduction

Genital warts are little more than a cosmetic nuisance — right? Medically speaking that’s true, but you try telling someone who has just been given the diagnosis or has found some lumps and bumps, and looked up an internet site and realised they have this infection. The emotional and psychological implications of the diagnosis are often one of the most difficult things to deal with. Patients need a lot of help and considerable time and guidance in dealing with the condition and managing the therapies. It is useful to point out that only 1% of patients who actually get infected with the virus produce genital warts, so we can see that genital HPV infection is almost ubiquitous. So when the warts are gone the patient is just like everyone else i.e. the virus may still be there but in latent form and they are no more likely to pass it on than the rest of the population. The vast majority of genital warts are managed in GUM / Sexual Health clinics. Possibly up to 20% are managed in interested general practices. The location is irrelevant. It is expertise, time and sympathy that are the important factors for the patient.

The current UK estimate of genital warts is probably around 150,000 new and recurrent cases per year (including general practice). This is a massive and expensive workload¹, as repeated visits are often needed and recurrences are common. Over 90% of clinically obvious genital warts are caused by HPV types 6 & 11. Initially the UK opted to use Cervarix® (HPV type 16 and 18) in the national HPV vaccination programme. This was a missed opportunity². Gardasil® contains HPV types 6 & 11, as well as 16 & 18, and at last the UK opted to use this vaccine from 2012, however in 12 year old girls only. The vaccine is highly effective and as HPV 16 and 18 are implicated in vulval, anal, vaginal and penile intraepithelial neoplasia and also oropharyngeal cancers it could protect against these also³. Vaccination of boys is under consideration⁴. A nanovalent HPV vaccine has also been licensed, which covers a wider range of high risk types.

This book has clinical images of warts in all shapes and sizes, and how I think they are best managed. The BASHH National Guidelines⁵ are a good source of evidence and expert opinion. However, with the multitude of treatments available, competence, personal experience and patient preference often dictate which modality is used. The initial section on ‘normal variations in the genital area’ is very useful for clinic staff to be able to reassure patients who are convinced they have genital warts, but what they have is just a common normal variant.

I use many of these pictures on my clinic computer during consultations and hope you find them just as useful in your clinic or practice. The normal variations are reassuring and some patients with extensive/difficult warts may benefit from being shown images of patients as bad or worse, in whom we still achieve total clearance.
Treatment

Most treatment aims to remove the bulk of the wart tissue. It is postulated that damaging the wart-infected area draws the infection to the attention of the immune system which recognises the virus as foreign and mounts the appropriate response. Until immune recognition occurs, there is a risk of recurrence and even new wart development. Previously, treatments were time consuming and required numerous clinic visits. Fortunately, there are therapies available (podophyllotoxin and imiquimod) that patients can apply in the comfort of their own home.

There is a wide range of treatment available and therapy should be tailored to the individual patient taking a number of factors into consideration, including the number and distribution of warts present, the morphology of the lesions and the patient’s preference for management. Therefore, each individual patient poses a unique clinical problem, so it is neither possible nor sensible to be prescriptive about treatments.

In general, small fleshy warts on moist skin can be treated with Podophyllotoxin or Imiquimod home therapy. If there are one or two large warts initial cryotherapy or Trichloroacetic acid (TCAA) can be used. Larger areas of infection and where warts are also on dry keratinised skin Podophyllotoxin will not work. In these cases Imiquimod is required, with or without initial cryotherapy or TCAA, but treatments should not be mixed in the same session. Recurrent disease is best treated with Imiquimod; with additional destructive therapy on separate occasions, guided by patient preference.

As Imiquimod uses the patient’s own immune system to clear the warts it is not surprising that recurrence rates are low. Heavy cigarette smoking seems to depress the immune system so I always encourage patients to give it up.

The Future?

Australia has certainly shown the way by introducing a quadrivalent vaccination programme for all 12 to 26 year old women in 2007. This has now resulted in almost complete eradication of genital warts in both young women and young men. However as young gay men did not benefit, vaccination of boys is now in place also. This led to my colleague in Melbourne, Prof Kit Fairley, describing this book as being of ‘great historical interest’ to Australian Sexual Health staff! Most staff will now never see genital warts other than in backpackers from countries who didn’t vaccinate with quadrivalent vaccine…i.e. the UK.

Treatments are now better with dignified home therapies available and research continues into the potential of vaccination as treatment for any genital HPV infection, possibly even oropharyngeal related HPV infection and cancers. One large study in Manchester showed good clearance rates of HPV16 related VIN, using Imiquimod and an HPV 16 vaccine.
Section I: Normal variations in genital area.

Many young people only see their own genitalia. It is therefore almost impossible for young men and women to know if recent changes, new developments, colour variation and lumpy bumpy bits are, in fact, a normal variant or something they should panic about and rush to the nearest clinic! Indeed, in a few cases, even experienced doctors and nurses can be uncertain whether pearly penile papules or vestibular papillae are really that or early genital warts.

It is, however, a satisfying consultation to be able to totally reassure some patients that the ‘lesions’ they are looking at are just a normal variation or else a harmless anomaly of no significance. They are more likely to accept the reassurance if they can be shown a picture, that is similar to their condition.

Pearly penile papules

Most penises have some and some penises have a lot.
(Figure 1) These seem to develop more prominently during teenage years and can be alarming to young men.

They are completely normal glands. They will never go away and they should not be treated, even if some patients think they look ugly and are demanding something must be done.

Figure 1: Normal glands on the corona glandis often called pearly penile papules.
Parafrenular glands

These are normal glands that are scattered on either side of the frenulum. Often there are just three or four lined up symmetrically. However, more often there is a scattering of glands that can look suspiciously like genital warts to the inexperienced eye (Figure 2).

In darker coloured skin they can be even more dramatic (Figure 3). The glands are usually small and smooth in comparison to warts which have a rough surface.

When both are present as in figure 4, it is very important to point these out to the patient because during home treatment some patients will treat these glands thinking they are warts.

The glands, of course, will not respond to the home therapy (podophyllotoxin or imiquimod) and the patient will become disillusioned with the treatment.

Figure 4:
Parafrenular glands with wart on the frenulum.
Fordyce spots

These glands are scattered in clusters along the reflex prepuce, the shaft of the penis and in the vestibular area of the vulva. In some patients, these patches of glands can be extensive and can be quite dramatic, especially when the skin is stretched (Figure 5).

Figure 6 shows penile skin with many of these small glands and there is a wart for comparison.

In some patients there can be sheets of it as in figure 6, in others there are just a few small patches, as in figure 7.

It is really important to point out to infected patients, which is and which is not a true wart infection. This should stop them applying treatment to normal Fordyce spots.
Figure 6a: Sheet of Fordyce spots with small warts developing on prepuce.

Figure 6b: Adjusting the angle of the examination light can make Fordyce spots easier to see.

Figure 7: Small patches of Fordyce spots.
Vestibular papillae

These small frond-like glands (Figure 8) can be quite confusing if they are extensive. In some patients it may be almost impossible to tell whether they are early genital warts or vestibular papillae (Figure 9).

Unlike warts, vestibular papillae are usually located in a symmetrical fashion. However, if uncertain, it’s best just to wait a month or two and review.

Figure 8: Vestibular papillae.

Figure 9: Close-up of vestibular papillae.

Figure 9a: Extensive vestibular papillae.
**Sebaceous cysts**
These are very common in the genital area. They can be alarming. They can grow quite fast, and many patients want surgical excision of these for cosmetic reasons. In some cases, however, they can be relatively discreet, painless and even unnoticed, as in figure 10. When they are on the scrotum they can be very prominent and most men want something done (Figure 11). These, however, are quite harmless, can be left alone, other than for cosmetic reasons.
Lymphocele

This is a cordlike swelling that develops behind the coronal sulcus. It is a lymph channel that has become solidified. The cordlike swelling can be smooth (Figure 12) or develop knobbly lumps and cause concern over cancer (Figure 12a). This can happen spontaneously or it can happen after vigorous sex or masturbation. It can be painful, so anti-inflammatory medication may be necessary i.e. Ibuprofen 400mg three times daily with food. The cordlike swelling gradually disappears and is of no consequence. Patients must be reassured that it is not a clot.

Figure 12: Lymphocele with smooth surface.

Figure 12a: Lymphocele with rough solidified surface.

Figure 13: Numerous angiokeratoma.

A few angiokeratoma are commonly found in the genital area. These are harmless clumps of tiny capillaries and patients can be reassured. In very rare cases they can be extensive and a condition called Fabry’s Disease should be considered. This patient had Fabry’s disease.


Conclusion

Fear and embarrassment over perceived genital anomalies is relatively common. Reassurance, delivered with authority and confidence and occasionally backed up by images such as these, is all that is needed.
Section 2: Superficially similar conditions
The following cases illustrate typical examples of conditions that have superficial similarities to warts but which have different origins.

Molluscum contagiosum
This viral infection produces multiple lesions which can be mistaken for genital warts. However, they usually occur in clusters and have a central punctation. They enucleate quite easily when scraped with a suitably broken wooden swab. Here, in figure 14, one has been removed leaving a small bleeding point, cryotherapy is also effective.

Section 3: Malignant lesions and when to biopsy
This is all down to experience. If warts are being managed in general practice, anything that is not a completely obvious wart should be referred to sexual health. Pigmented areas, flat warts, older age group, immunosuppression and heavy smoking are all features that tilt us in sexual health towards biopsy.

Flat warts or Bowen’s disease
These are often a particular problem and the attitude should be ‘when in doubt, biopsy’. Bowen’s disease is a pre-malignant condition that should be recognised clinically, and a biopsy done. In this case, in figure 15 on the following page, biopsy showed Bowen’s disease.
Bowen’s disease
This patient had a circumcision performed by a plastic surgeon with an excellent result.

Figure 15: Flat warts or Bowen’s disease?

Figure 16: Bowen’s disease post-circumcision.

Vulval Intraepithelial Neoplasia (VIN)
Although there are some wart-like lumps present in figure 17, on the vulva there are obvious pigmentation changes and excoriation, and biopsies from several sites here showed VIN 2-3.

Figure 17: VIN 2–3.
Section 4: Case studies

The following cases illustrate typical examples of anogenital warts and discuss treatments that are likely to bring about the fastest clearance with the least disruption to the patient’s lifestyle.

Preputial warts

In this common presentation, all of the warts are of the soft, fleshy type on moist skin and would absorb topical preparations readily. Home therapy with podophyllotoxin or imiquimod would be an ideal initial therapy in this case. (Figure 18)

Long-standing preputial warts

These have been present for some time owing to the patient’s embarrassment about attending the clinic. (Figure 19). There would be several options to consider here: one might be to de-bulk the area initially with cryotherapy before prescribing home therapy such as podophyllotoxin or imiquimod. Alternatively just go straight for podophyllotoxin or imiquimod and clear any stubborn warts with cryotherapy.

Figure 18: Preputial warts.

Figure 19: Long-standing preputial warts.
Scattered warts on the dry skin area of the penis

These keratinised warts would not usually respond well to podophyllotoxin and as there are only a few small warts, destructive therapy on the first visit might lead to a complete resolution. In this case, the patient was treated with 90% TCAA applied using a double-ended cotton bud. (Figure 20). Any TCAA that trickles onto the skin should be mopped up immediately, although with practice, the liquid can be restricted neatly to the wart area, as in figure 21. In persistent/recurrent cases imiquimod is indicated.

**Figure 20:** Applying TCAA with a double-ended cotton bud, any inadvertent trickle can be dried up with the dry end instantly.

**Figure 20a:** TCAA ‘frosting’ occurs rapidly after application.

**Figure 20b:** Months later no sign of warts and only slight trace of scarring.
Penile shaft warts
These are often dry and keratinised and do not respond well to podophyllotoxin. The preferred options might be TCAA or imiquimod 5% cream.

However, if the warts are small in number, as in this case, a single application of TCAA will suffice provided there are no recurrences. The picture (Figure 21a) shows the scabbing and crusting caused by TCAA five days post application.

Figure 21: Keratinised warts being treated with TCAA, on dry foreskin in a circumcised patient. Warts are less likely, but circumcision is no guarantee of protection.

Extensive penile warts
These are mainly on dry keratinised skin. In this case there are far too many for TCAA or cryotherapy, which might indeed cause some stricturing. Imiquimod was the first choice in this case and the warts resolved within weeks. Prior to imiquimod such cases often required circumcision.

Figure 22: Extensive penile warts.

Rarely genital wart virus can infect other mucus membranes. High as well as low risk HPV types can infect the oropharyngeal area. This wart was frozen off easily but these cases should be referred to ENT surgeons for excision and histology.
Vulval warts
Scattered, soft, fleshy warts in the vestibular area are a common presentation of vulval warts. They often respond to home therapy with either podophyllotoxin or imiquimod.

Figure 24: Vulval warts.

Figure 24a: In this patient I applied TCAA to help debulk and cause inflammation in the carpet of warts initially. She then applied Imiquimod for 6 weeks.

Figure 24b: She achieved complete resolution. She kindly agreed to return for a post treatment photo 6 months later.
Single large genital warts

Such cases are usually best treated with cryotherapy and one or two visits are usually sufficient.

Scissors excision is an option. Hyfrication or electrocautery are used by some but there is concern about inhaling plumes of viral DNA.

Figure 25: Single large genital warts.
Urethral warts

Cryotherapy is the usual method of treatment and if this is extensive, patients have to be warned to keep the opposing surfaces separate or they may adhere, leading to meatal stricture.

Figure 26: Urethral wart before treatment.

Figure 26a: Urethral wart undergoing cryotherapy treatment.

Figure 27: Inflamed meatus after Imiquimod self-treatment.

This patient had preputial warts and was applying Imiquimod but also noticed a meatal wart, so applied cream to the meatus. Imiquimod is not licensed for mucous membranes, as inflammation can be marked. The inflammation is usually painless and resolves on stopping therapy. This resolved in a week and all warts were cleared.

Peri-anal warts

Treatment of warts in the peri-anal area is often difficult as the patient cannot see how therapies are going. Also, cryotherapy and TCAA, and other destructive methods in this area can lead to pain and difficult hygiene.

As there is often a mixture of keratinised and non-keratinised warts, the options are for possible initial de-bulking with cryotherapy of the more peripheral larger warts. This can be followed at a later stage by imiquimod. Indeed, this home therapy could be tried as first-line treatment, depending on the patient’s preference.
Peri-anal and anal warts

Many patients with genital warts also have anal or peri-anal warts. (Figure 29). Anal sex is not a prerequisite for infection, the virus can track round in sweat etc. Some patients are very embarrassed and delay seeking treatment, hoping they will go away. This can result in some patients presenting with very large and difficult to treat warts. (Figure 33 and figure 34 anal warts only).

Figure 29: vulval and anal warts in a 19 year old.

This 19 year old’s teenage years had been blighted by chronic recurrent genital warts. She had even had surgery but they recurred. When I first saw her (Figure 29) I encouraged her to use imiquimod for 2 months whilst I organised surgery. Delicate needle diathermy removed or destroyed all lesions.

At 7 weeks post-op there were two small anal margin recurrences which cleared on 2 weeks of imiquimod. She remains clear, 9 months later.

Figure 30: needle diathermy with smoke extractor at start of process.

Figure 31: needle diathermy with smoke extractor near end of process.

Figure 32: 3 weeks post-op.
Often the infection is more widespread and includes keratinised warts. Initial debulking preceded and/or followed by imiquimod is best.\(^8\)

Figures 35, 36 and 37 show carpet warts, is proctoscopy necessary in these cases?

Some patients will be concerned that they have felt ‘lesions’ inside also and they will need to be reassured one way or the other. However, there are almost always enough warts available for treatment externally to be going on with and one would hope that immune clearance would eventually clear any internal warts also.\(^9\)

HIV positive homosexual men have a higher incidence of anal cancer from infection with HPV16 and 18 and may require detailed examination and a lower threshold for sending for biopsy of anal or perianal lesions.

**Figure 33:** Anal warts only.

**Figure 34:** Extensive perianal warts.

**Figure 35:** Carpet warts, pre-treatment.

**Figure 36:** Close-up view.

**Figure 37:** After 2 months’ imiquimod.
Vaginal warts

Usually, vaginal warts occur with vulval warts. It is possible that by eliminating the vulval warts an immune response is created leading to spontaneous clearance of the vaginal warts. However, vaginal warts can be treated at the same time, if necessary, using either TCAA or careful application of cryotherapy.

Cervical warts

Cervical warts are uncommon. Previously it was thought necessary to refer these patients for colposcopy, as there is often some degree of dyskaryosis associated with these lesions. However, many are caused by types 6 & 11, and the current guidelines from the British Association for Sexual Health & HIV (BASHH) do not recommend automatic referral for colposcopy. The genital wart guidelines on the BASHH website say:

“In keeping with the NHS cervical screening programme we would not recommend colposcopy in women with genital warts, including those with cervical lesions, unless there was diagnostic uncertainty or clinical concern.”

I would therefore treat the wart on the cervix (figure 39) with cryotherapy and use imiquimod for any external lesions.

Despite availability of good data, opinion varies on the best age to commence cervical cytology, in the UK it is now 25. NHS cytology departments will only accept smears from age 24¼.

Cervical screening under the age of 20 unearths an enormous amount of HPV infection that was destined for spontaneous regression and has never been shown to be an effective use of national resources.10
Warts in pregnancy

These can be alarming in terms of both size and the speed of growth. Podophyllotoxin is potentially teratogenic. The risk of transmission to the baby is small at 1 in 400. If infected the baby could develop laryngeal papilloma. Any intervention, i.e. caesarean section, has not been shown to be effective in preventing transmission, so probably best not to mention it – unless the woman initiates the discussion.

The effect of imiquimod during pregnancy is unknown. One option is to do nothing and reassure the woman that these warts often spontaneously resolve within 6–8 weeks post-delivery, at which point any remaining wart tissue can then be treated. If the patient wishes, treatment can be carried out during the pregnancy with either TCAA or cryotherapy.

Cryotherapy

When using cryotherapy, a carbon dioxide ‘gun’ can give an accurate deep freeze.

It is essential to freeze tissue below the wart and not just the wart itself so that necrosis occurs deep to the wart tissue.

There is no substitute for experience in judging the length of the time required.
Case study: Podophyllotoxin

Initial presentation
This patient presented with a small cluster of warts on the coronal sulcus.

Figure 43: Initial presentation.

After 7 days
Seven days after presentation and a three day course of Podophyllotoxin cream, the wart is whitened and disintegrating. There is also some painless inflammation in the surrounding area.

Figure 44: After 7 days.

After 14 days
The skin is completely back to normal and the wart has been cleared. Some patients get inflammation, but once the treatment is stopped this resolves completely.

Figure 45: After 14 days.
**Section 5: imiquimod case studies.**

**Case study number 1.**

Imiquimod Cream 5% (Aldara™) activates the body’s immune response to clear genital warts. This mode of action can quickly lead to extreme erythema which, if not explained to the patient beforehand, can lead to cessation of treatment. Experience shows that the greater the erythema the more successful the outcome, although it is not a pre-requisite for imiquimod to be effective. The erythema is usually painless and can be managed by simple washing and salt baths. Many clinics use physical (ablative) therapies, as some patients psychologically like to see some of the larger warts being de-bulked.

**Initial presentation**

24 year old female with extensive genital warts, of 2-months’ duration. (Figure 46). The largest wart areas were treated with cryotherapy on the first visit.

![Figure 46: Initial presentation.](image)

**Early treatment response**

Patient applied imiquimod cream in her own home 3 times per week. She returned to the clinic with severe vulval erythema, and with extensive warts still present. (Figures 47 and 48). The erythema indicates the area where HPV may be present.

The patient was advised to take a treatment break of 2–3 weeks and then gradually re-start. The patient started re-applying the imiquimod Cream 6 weeks later.

![Figure 47: Early treatment response.](image)
Successful treatment outcome

4 weeks after finishing the course the patient was reviewed, the warts had completely cleared and there was no further erythema (Figures 49, 50). Some patients and clinics get alarmed at the erythema, which can even look like a herpes infection if the reaction is intense. However it is not usually painful. It is not an allergic reaction and imiquimod can be safely resumed if necessary, when the inflammation has settled.

Figure 48: Early treatment response.

Figure 49: 4 weeks after finishing course of imiquimod.

Figure 50: 4 weeks after finishing course of imiquimod.
Case study number 2.
19 year old girl did not want any initial cryotherapy or TCAA, just wanted home treatment.

Figures 51, 52 and 53 show pre-treatment, after 5 weeks and at 3 months.

Only mild asymptomatic erythema developed and resolved on stopping treatment.

There were no recurrences.
Case study number 3.
Case 3 is a 35 year old male with warts on the glans penis and the prepuce. Within 3 weeks of imiquimod the warts had gone. There was slight erythema and swelling which resolved over the following week.

Some uncircumcised patients get slight oedema and tightening of the foreskin during treatment. If this is a concern the man should be told to make sure the foreskin is not left retracted for any length of time or a paraphimosis can develop.

Note the slight constriction of foreskin in figure 55. This constriction resolved within days of stopping treatment.

Figure 54: Before imiquimod treatment.

Figure 55: Imiquimod treatment at 3 weeks.
Case study number 4.

An 18 year old had been too embarrassed to attend and his warts became extensive. I tried cryotherapy on first visit but he found it excruciatingly painful.

Within 4 weeks of imiquimod treatment there was dramatic reduction (Figure 57). Some oedema and tightness of the foreskin did develop but at 3 months all was clear.

Figure 56: Extensive glans and foreskin warts.

Figure 57: After 1 month of imiquimod.

Figure 58: Slight oedema of foreskin with excoriation of glans penis.

Figure 59: All clear at 3 months.
Case study number 5.

37 year old man presented with a white wart patch (Figure 60). Biopsy showed wart virus infection only. He was treated with imiquimod. The wart cleared but he developed florid lichen sclerosus needing circumcision (Figure 61).

In hindsight there were features of early LS there with slight adherence already of the prepuce. There is increasing evidence that imiquimod can exacerbate auto-immune conditions of the skin and should not be used in patients with genital eczema, psoriasis, lichen sclerosus, lichen planus etc.

Figure 60: Unusual white patch raised concern that this might not be a wart.

Figure 61: Adhesions, excoriation and erythema after 3 weeks of imiquimod.
Case study number 6.
This 34 year old man had penile warts. After months of other therapies he tried imiquimod three times a week and noted an improvement. He decided to apply imiquimod three times daily to speed up the process. After one week the penis became very inflamed (Figure 62).

It was not as painful as it looked and simple hygiene with salt baths was enough for complete resolution in ten days (Figure 63).

It is important to reassure patients that even severe inflammation will resolve without sequelae. It is best to resist the temptation to prescribe a steroid cream to suppress the response as this might undo the otherwise beneficial immune process.

Figure 62: Severe inflammation after excessive use of imiquimod.

Figure 63: Complete resolution with simple hygiene.
Case study number 7.

Initial biopsy from 3 sites showed ‘usual’ type VIN and genital warts. Surgery was considered but a trial of Imiquimod was tried first to clear the HPV infection. Two years later there was still complete resolution. Imiquimod is not licensed for treating VIN, or any intraepithelial neoplasia but studies do show benefit in some cases.


Figure 64: Pigmented warts and VIN.

Figure 65: Warts and VIN almost cleared after 3 months intermittent treatment with Imiquimod.
Case study number 8.
If patients with diabetes contract genital warts the infection can be extensive and difficult to treat. Recurrences are also more likely.


Figure 66: Diabetic teenager with extensive soft and one large keratinised wart.

Figure 67: Complete resolution after 2 months Imiquimod.
Case study number 9.

Figure 68: Very extensive penile keratinised warts in a patient with diabetes.

Figure 69, 70: Despite repeated cryotherapy the warts continued to thrive so circumcision was performed with an excellent result.
Case study number 10.

Figure 71, 72: Florid penile warts in patient with diabetes.

Figure 73, 74: This patient was not keen on circumcision, although he did allow me to refer him to a surgeon, as I explained that an elective appointment could take months. In the meantime he used Imiquimod and by the time he was seen at surgical outpatients 2 months later, he had 90% resolution, so no surgery was required. I phoned him 6 months later and it had all cleared with no recurrences.
Case study number 11.

Genital warts need significant cryotherapy. Simply freezing the wart is not enough. Some freezing of underlying tissue gets faster results and therefore less visits. Most patients want fast clearance and will tolerate the pain when given the choice. I always ask the patient to tell me if they wish the freeze to stop.

To view video clips on cryotherapy, please visit the Chester sexual health website.
Case study number 12.

CO2 cryotherapy machines are cumbersome and there are problems with servicing. The push towards satellite clinics makes it imperative to have smaller more convenient devices. Hydrozid is a canister containing 250 ml of the liquefied gas norflurane. Several repeated freeze-thaw cycles are recommended as a single treatment.

![Figure 78: Wart on prepuce.](image)

**Figure 78a:** Select suitable hole from template that will shield surrounding skin.

**Figure 78b:** Spray for a few seconds until wart freezes and repeat.
Case study number 13.
This patient was treating penile shaft warts with imiquimod and the cream was also absorbed by the opposing surface of the scrotum. Depigmentation is a recognised but rare side effect of imiquimod. Scrotal skin is thin and delicate and in some patients should be protected, by applying an emollient like petroleum jelly to act as a barrier.

Figure 79: Small patch of depigmentation on scrotal skin.

Figure 80: Hair growing from depigmented patch is also depigmented.
References


2. O'Mahony C. Government decision on national human papillomavirus vaccine programme is a sad day for sexual health. Sex Transm Infect 2008;84:251.


4. Stanley M, O'Mahony C, Barton S. HPV vaccination – what about the boys? BMJ 2014;349:g4783 doi: 10.1136/bmj.g4783 (Published 29 July 2014)


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