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# Safety protocols for *Gua sha* (press-stroking) and *Baguan* (cupping)

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**Summary** *Gua sha* (press-stroking) and *Baguan* (cupping) are therapeutic procedures of traditional East Asian medicine (TEAM) that are also practiced in integrative clinical as well as domestic or familial settings. They may be defined as instrument assisted mechanical stimulation of the body surface that intentionally creates therapeutic petechiae and ecchymosis representing extravasation of blood in the subcutis. Blood and 'other potentially infectious material' (OPIM) can sometimes be drawn through the surface of the skin leading to potential contamination of instruments and to risk of bloodborne pathogen exposure. Neither the literature nor the current national standards of the acupuncture profession sufficiently address safety standards for *Gua sha* and *Baguan*. This paper presents the nature of the potential risks and applies current hospital safety standards as proposed protocols for *Gua sha* and *Baguan*.

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## Background

*Gua sha* and *Baguan* are integral aspects of traditional East Asian medicine (TEAM) and may be used alone or in conjunction with other modalities such as acupuncture. *Gua sha* is used as a form of self or familial care in the home<sup>1–4</sup> as well as in traditional East Asian clinical practice.<sup>5–9</sup> *Baguan* is also practiced in the clinical setting<sup>10,11</sup> as well as by folk healers and familial caregivers.<sup>12–14</sup>

*Gua sha* and *Baguan* are indicated for 'blood stasis', characterized by fixed or recurrent pain in acute or chronic disorders. Blood stasis in the surface tissue is also called *sha*.

## Gua sha

*Gua sha* consists of closely timed, repeated, unidirectional press-stroking with a smooth-edged instrument over a lubricated skin area until petechiae appear. The petechiae readily fade to ecchymosis that resolves completely within several days. The literal translation of 'sha' is 'sand, shark-skin, or red, raised, millet-size rash'.<sup>15</sup>

*Gua sha* is practiced throughout Asia under different names<sup>d</sup>; Western medical literature terms also include 'coining', 'scraping' and 'spooning'.<sup>16</sup> Two modern adaptations of *Gua sha* are marketed as 'Gaston Technique' and 'Augmented Soft Tissue Mobilization' (ASTYM). The smooth-edged tools used are commonly re-used on multiple patients

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<sup>d</sup> 'cao gio' (Vietnam); 'kerok' (ka-drik or ka-drok) or 'kerokan' (Indonesia); 'kos khyal'<sup>1</sup> or 'ga-sal' (Cambodia); 'khoued lam' (cooed-lum) (Laos).<sup>16</sup>

and therefore may risk transfer of blood-borne pathogens and/or other potentially infectious material (OPIM).

## Baguan

The Chinese term *ba* means to pull out or pull up, while the term *guan* refers to a jar or pot. *Baguan* involves the application of suctioned round cups on the skin. The vacuum within each cup is produced by flame or by mechanical suction that causes the tissue to tumify and stretch into the cup. Cupping creates round or nummular petechiae and ecchymosis. In a variant known as wet cupping, a skin site is superficially poked and then cupped to intentionally draw blood into the cup.

Cups today are typically made of glass or plastic. With cupping, blood and OPIM may be intentionally or unintentionally drawn into cups. Unintentional expression of blood or fluid into cups may result from open blemishes or pimples, and may or may not relate to excessive suction force, skin fragility or hydration. Minute amounts of blood or fluid may express into the cups and not be visible to the naked eye and therefore *Baguan* cupping may risk transfer of blood-borne pathogens and/or OPIM. Cupping devices are commonly re-used on multiple patients.

## Indications for *Gua sha* and *Baguan*

*Gua sha* and *Baguan* are generally regarded in TEAM as effective for acute or chronic pain and for mild to severe conditions such as colds, flu, fever, heatstroke, respiratory problems such as asthma, bronchitis, and emphysema; functional internal organ problems; musculoskeletal problems and in any case of recurring or persistent fixed pain.<sup>17,18</sup>

*Gua sha* significantly increases surface microperfusion<sup>19</sup> and upregulates gene expression of heme oxygenase-1 (HO-1)<sup>20</sup> that may account for its anti-inflammatory effect in general, and its hepatoprotectant effect in chronic active Hepatitis B.<sup>21</sup> In randomized controlled trials *Gua sha* is effective for neck pain<sup>22</sup> and breast distension/mastitis.<sup>23</sup>

A 2010 systematic review of *Baguan* cupping concluded a majority of Chinese studies show potential benefit for pain conditions, herpes zoster and other diseases.<sup>17</sup> Two recent randomized controlled trials published in the West found wet cupping effective for chronic low back pain.<sup>24,25</sup>

Benefits from *Gua sha* and *Baguan*, such as fever reduction, pain relief and ability to breathe, can be felt immediately and are sustained to some degree over time where repeated treatment may be indicated to reach maximum sustained benefit and or until the problem is completely resolved.

## Contraindications

*Gua sha* and *baguan* are contraindicated over any area where the dermis or flesh is injured or compromised as in sunburn, abrasion, rash or contusion except in cases of eczema where wet cupping may be indicated. In cases of injury, these techniques may be usefully applied to areas away from but related to the injured site.

*Gua sha* is not contraindicated in patients with a stable INR (International Normalized Ratio) who take anticoagulation medication.<sup>26</sup> Particularly long or heavy cupping would be contraindicated in a patient using anticoagulant therapy.

## Risk of bloodborne pathogen exposure

A Medline and Chinese language database search revealed no reported cases of bloodborne pathogen transmission through *Gua sha*, Graston or ASTYM devices. However, disease transmission may be unrecognized because the possibility has not been considered. Indeed, even the US guidelines and safety standards of the acupuncture profession make no mention of *Gua sha* when presenting equipment recommendations, providing general guidelines, and pointing out the safety issues of various special techniques.<sup>27,28</sup>

It can be observed during *Gua sha* that some blood cells leave the skin surface and appear on areas of the patient's skin, the stroking tool, used lubricant, and the provider's hands if not gloved for the procedure. Contamination could be spread to the lubricant container and contents if one dips back into the container for additional lubricant. Environmental surfaces may also become contaminated. The re-use of stroking tools without decontamination could risk bloodborne pathogen exposure to other patients.

Moreover it is possible that levels of contamination below the threshold of unaided visual perception also occur. Even minute quantities of blood and OPIM are capable of transmitting pathogens such as hepatitis B virus (HBV), hepatitis C virus (HCV), and human immunodeficiency virus (HIV).<sup>28</sup>

When *Baguan* draws blood or body fluids into a cup, there is unequivocal contamination of the cup and of the skin area that has been cupped. Contamination can spread to the clinician's hands if ungloved and face if unshielded, and splashing or aerosolizing of the cup's contents occurs. The re-use of contaminated cups without decontamination can expose other patients to bloodborne pathogens.

Complications as well as transmission of infection have been documented from cupping. Factitial panniculitis and herpes simplex virus (HSV) have been reported secondary to cupping demonstrating that transmission of bloodborne pathogens can occur.<sup>29,30</sup> U.S. guidelines and safety standards of the acupuncture profession contained in the current National Acupuncture Foundation's Clean Needle Technique (CNT) Manual are incomplete in their safety recommendations.<sup>28</sup> They omit the need for caution in removing cups containing blood or body fluids with respect to the potential for splash or aerosol formation upon the release of suction. However, this caution was provided in the previous edition of those standards as was recommendation for gloving when removing cups containing blood or body fluids and sterilization prior to re-use.<sup>27</sup>

While the re-use of various medical devices designed for a single use occurs in developing as well as developed countries,<sup>31</sup> the practice risks transmission of blood-borne pathogens. Protocols for safe use/re-use of *Gua sha* and *Baguan* instruments are proposed based on safety standards applied to medical devices of similar 'criticality' used in conventional medical settings.

## Centers for Disease Control (CDC) guidelines

### Medical instruments

US Centers for Disease Control, CDC defines medical instrument criticality and required decontamination procedures. Adoption of these standards for some integrative medicine modalities has been suggested<sup>32</sup> but utilization is uneven or absent within the integrative medicine community.

According to the CDC

- *Critical items* are objects that enter sterile tissue or the vascular system and must be sterile because any microbial contamination could transmit disease (CDC); they require sterilization prior to re-use.<sup>33</sup> Critical instruments may not be 'dedicated', that is, saved and labeled for use in a single patient without sterilization.
- *Semi-critical items* are those that make contact with non-sterile mucous membranes or nonintact skin and require sterilization if possible or high-level disinfection prior to re-use.<sup>31</sup> Semi-critical instruments may not be 'dedicated'.
- *Non-critical instruments* contact intact skin, and require intermediate level disinfection or low level disinfection prior to re-use. Some non-critical instruments are allowed to be dedicated for reuse in a single patient but not without required disinfection.

Cups used for wet cupping are categorically critical items: they clearly come into contact with blood and body fluids and therefore confer a high risk for infection transfer requiring disposal or cleaning with sterilization if intended for re-use.

*Gua sha* and *Baguan* instruments have been mistaken as non-critical instruments because they appear to contact 'intact' skin. However, the contact is not incidental but involves enough repeated or sustained pressure as to (intentionally) cause extravasation of blood and fluids that can seep or be let from the skin even if not immediately visible. They are categorically *critical or semi-critical instruments* that require sterilization or high level disinfection before re-use or safe disposal after one use.

## Occupational Safety and Health Administration (OSHA) guidelines

### Personal protective equipment (PPE)

OSHA sets the Bloodborne Pathogens Standard with respect to the use of personal protective equipment (PPE). PPE refers to protective gear: examination gloves, face shields, masks and protective eyewear that form a barrier against hazardous exposures to the provider of medical care ([http://www.osha.gov/dte/library/ppe\\_assessment/ppe\\_assessment.html](http://www.osha.gov/dte/library/ppe_assessment/ppe_assessment.html)). PPE recommendations for *Gua sha* and *Baguan* have to be responsive to the risk of exposure to blood and fluid and comply with OSHA recommendations for safe practice.

## Recommended safety protocols for *Gua sha*

### *Gua sha* instruments

For *Gua sha*, the first recommendation is to exclusively use single-use *disposable* press-stroking devices. Metal jar lids, manufactured with a smooth rolled edge, function admirably and economically in this capacity. Since press-stroking tools are potentially contaminated by blood and/or OPIM they are classified as critical instruments and subjected to sterilization or high level disinfection if they are to be re-used. It is simpler and far more practical to dispose of them properly after single use. Note that *Gua sha* instruments must be washed and decontaminated even if intending to be disposed of after use.

It would be acceptable to re-use press-stroking devices made of metal such as stainless steel provided that they are cleaned, i.e. *washed with soap and water immediately after use, taking care to remove the oils from the lubricant, and then sterilized or disinfected with a high level, registered hospital-grade disinfectant prior to re-use*. Professional Disposables International (<http://www.pdipdi.com>) makes alcohol based germicidal disposable wipes (Super Sani-Cloth, purple top) that are bactericidal, tuberculocidal, and virucidal tested to be effective against 26 microorganisms including TB, Influenza A (H1N1) and MRSA. Wiping the outside and inside of the instrument is required, and drying for at least 2 min. If patient exposure to the presence of dried chemical disinfectant is a concern, then flushing the instrument with clean water after disinfection and air drying is recommended.

Press-stroking devices that are made of materials such as horn or bone are not suitable for heat or chemical sterilization and are therefore no longer appropriate for clinical use.

### Lubricants

Decant an amount of lubricant for *Gua sha* into treatment-sized portions prior to starting the procedure. Small paper cups serve well as secondary containers. Dispose of leftover lubricant and paper cup without returning any lubricant to the primary container. This prevents contamination of the primary lubricant container and its contents.

PPE standards recommend gloving both hands prior to performing *Gua sha* and while wiping off excess lubricant at the end of the procedure. Then one may remove gloves and wash hands.

Note that latex examination gloves carry a risk of severe allergic reaction and may tear when in contact with petroleum-based lubricants. It is preferable to use nitrile or vinyl gloves, which must be disposed after a single use.

### *Gua sha* procedure sequencing

Finally a less obvious but relevant recommendation is to consider the sequencing of *Gua sha* with other procedures, with respect to the need for PPE. For acupuncture after *Gua sha* both hands should be gloved for palpation, needle insertion, needle manipulation and needle removal. For acupuncture

**Table 1** Summary of recommended safety protocols for *Gua sha*.

1. For *Gua sha* a single-use disposable press-stroking device should be disposed of. Any metal or stainless steel *Gua sha* instrument designed for re-use should be cleaned, washed (immediately after use) and disinfected with a high level, registered hospital-grade disinfectant.
2. Decant lubricant into a disposable secondary container.
3. Personal protective equipment (PPE): glove both hands for the procedure.
4. Consider procedure sequence with respect to PPE needs.

done prior to *Gua sha*, one could palpate and needle without gloves; it is a good but not mandatory precaution to glove the hand that holds the cotton ball on needle removal. Then glove both hands for *Gua sha*. **Table 1** summarizes the recommended protocols for *Gua sha*.

## Recommended safety protocols for *Baguan*

### *Baguan* instruments

*Baguan* cups used for wet cupping are by definition critical instruments and subject to sterilization if they are to be re-used. Cups that have become contaminated with blood or OPIM may not be re-used without cleaning and sterilization. It is questionable however, which, if any, of the various makes of plastic cups will survive repeated autoclaving. It may be simpler and far more practical to dispose of cups that have become contaminated with blood or OPIM from wet cupping. Disposable cups (*buhuankeop*) are available from Seongho Trade Korea (<http://www.9988.tv>)<sup>25</sup> and cup inserts are available from Lhasa OMS (<http://www.lhasaoms.com>). Note that cups must be washed and decontaminated even if intending to be disposed of after use.

Cups used for dry cupping are *critical or semi-critical instruments* that require sterilization or high level disinfection before re-use or safe disposal after one use. Even if intended as dedicated instruments they must be properly decontaminated per their criticality exposure before re-use on a single patient or disposal.

High level disinfection of dry cups may be accomplished in the same fashion as detailed above for *Gua sha* instruments. It would be acceptable to use a plastic cup liner, and to dispose of it after use in one treatment. Cup liners are currently available only in a 2 in. diameter. The liner has a hole at its apex, which is necessary for the passage of suction pressure. Thus it cannot be relied upon to prevent blood or OPIM contamination of the cup so high level disinfection of the cups still applies.

Recommendations for personal protective equipment (PPE) with *Baguan* are first to glove both hands to handle cups whether or not they are visibly contaminated with blood or OPIM. Also use a face shield or mouth and eye protection when releasing the pressure of cups contaminated with blood or OPIM due to the risk of potential splash and or aerosolization of blood and fluids by air turbulence. Continue to use this PPE while disposing of the liquid down a

**Table 2** Summary of recommended safety protocols for *Baguan*.

1. Cups used for wet cupping should be cleaned, washed (immediately after use) and sterilized before re-use or before being disposed of.
2. Cups used for dry cupping should be cleaned, washed (immediately after use) and disinfected with a high level, registered hospital-grade disinfectant before reuse or being disposed of.
3. Personal protective equipment (PPE): wear gloves at all times.
4. When cups are obviously contaminated with blood or OPIM, wear gloves and use a face shield (or mouth and eye protection) when releasing pressure, and when disposing of cup contents.
5. Any article that is soaked or caked with blood must be disposed of in a 'hazardous waste' container.
6. Consider procedure sequence with respect to PPE needs.

sink drain. Cups should be washed and either sterilized or decontaminated immediately after use to avoid caking or drying of blood. Any blood or fluid soaked gauze or paper towel must be disposed of in a 'hazardous waste' bag or container. When rinsing the cup and sink, take care to avoid splashing.

### *Baguan* procedure sequencing

The fourth recommendation is to consider the sequencing of *Baguan* with other procedures, with respect to the need for PPE. If one does cupping that draws out blood or OPIM, and next intends to insert filiform acupuncture needles in the same area, then both hands should be gloved for acupuncture point palpation, needle insertion, needle manipulation and needle removal. This precaution is due to potential contamination on the cupped skin area.

If needling is done prior to *Baguan*, one could palpate and needle without gloves, as the skin would not have been previously contaminated. It is a good but not mandatory precaution to glove the hand that holds the cotton ball on needle removal. Then glove both hands for *Baguan*, as cupping over an area that has just been needled is likely to draw blood into the cup. **Table 2** summarizes the recommended protocols for *Baguan*.

## Summary

*Gua sha* and *Baguan* are essential modalities of TEAM and are also used in the West as integrative modalities. CDC and OSHA standards apply to integrative modalities as well as those of conventional medicine. Due to the risk of exposure to blood and OPIM the instruments used for *Gua sha* and *Baguan* require either safe disposal after one use or decontamination and sterilization or disinfection with a registered hospital-grade disinfectant agent before re-use. Whether in a private or hospital setting, required safety standards apply and should be adopted and enforced within the acupuncture and integrative medicine communities.

## Conflict of interest

The authors declare that they have no conflict of interest.

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